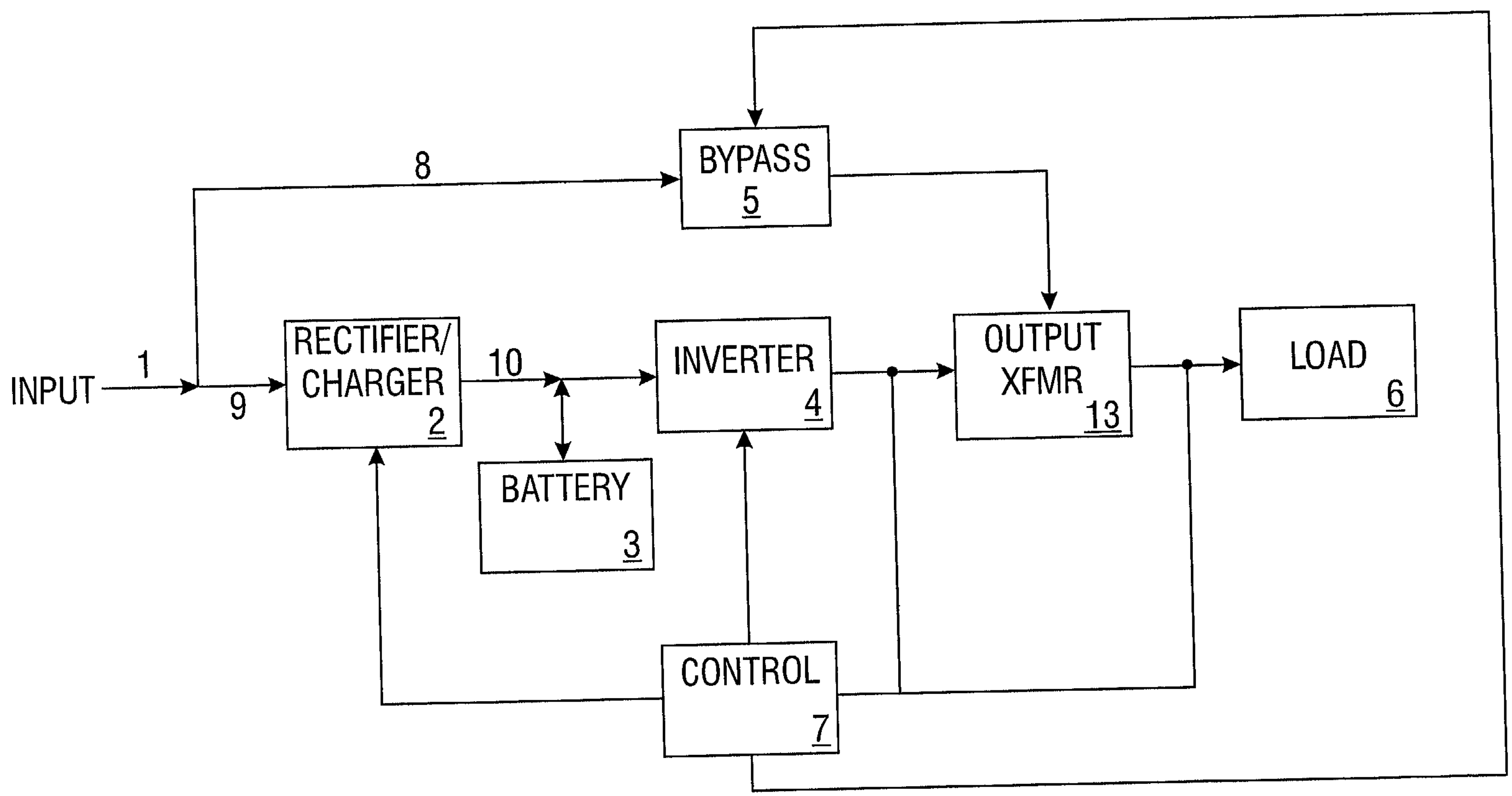


FIG. 1

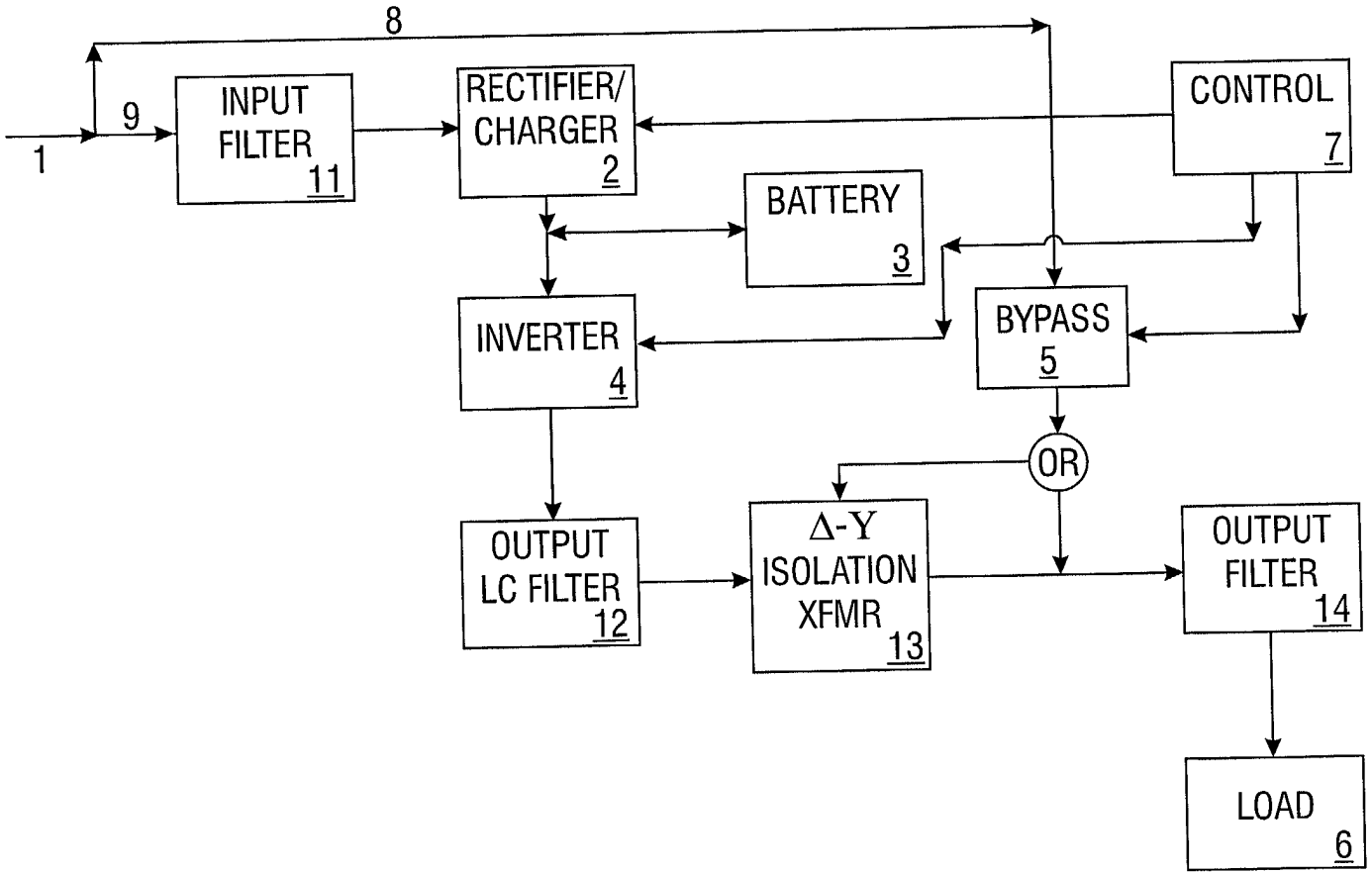


FIG. 2

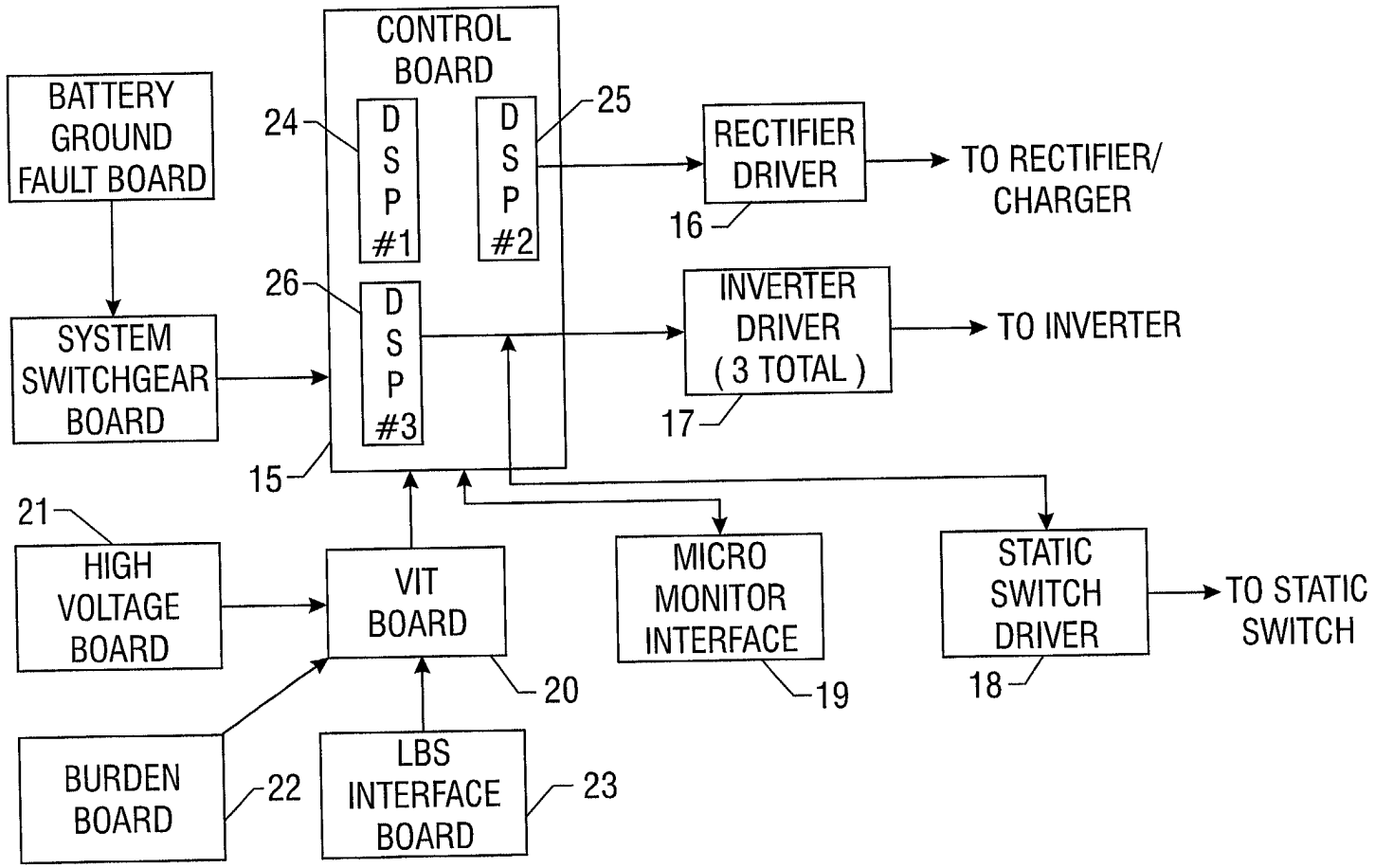


FIG. 3

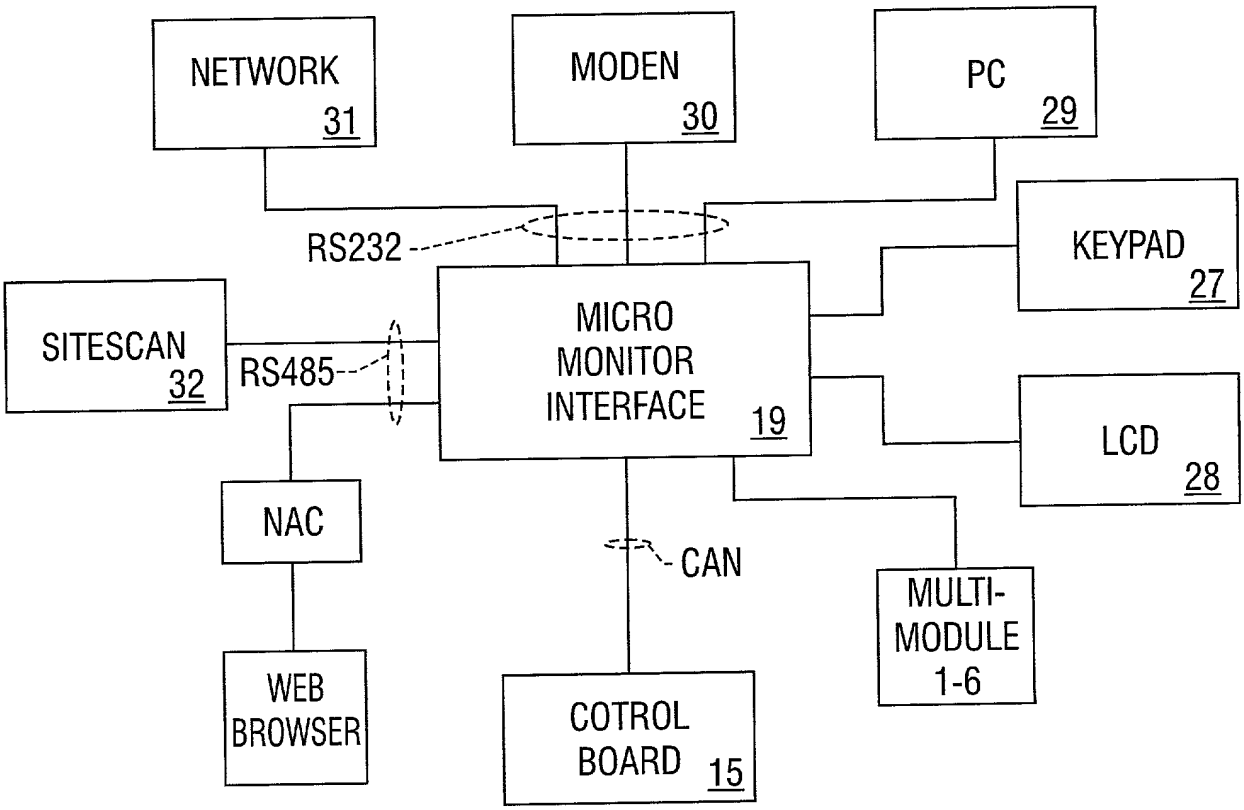


FIG. 4

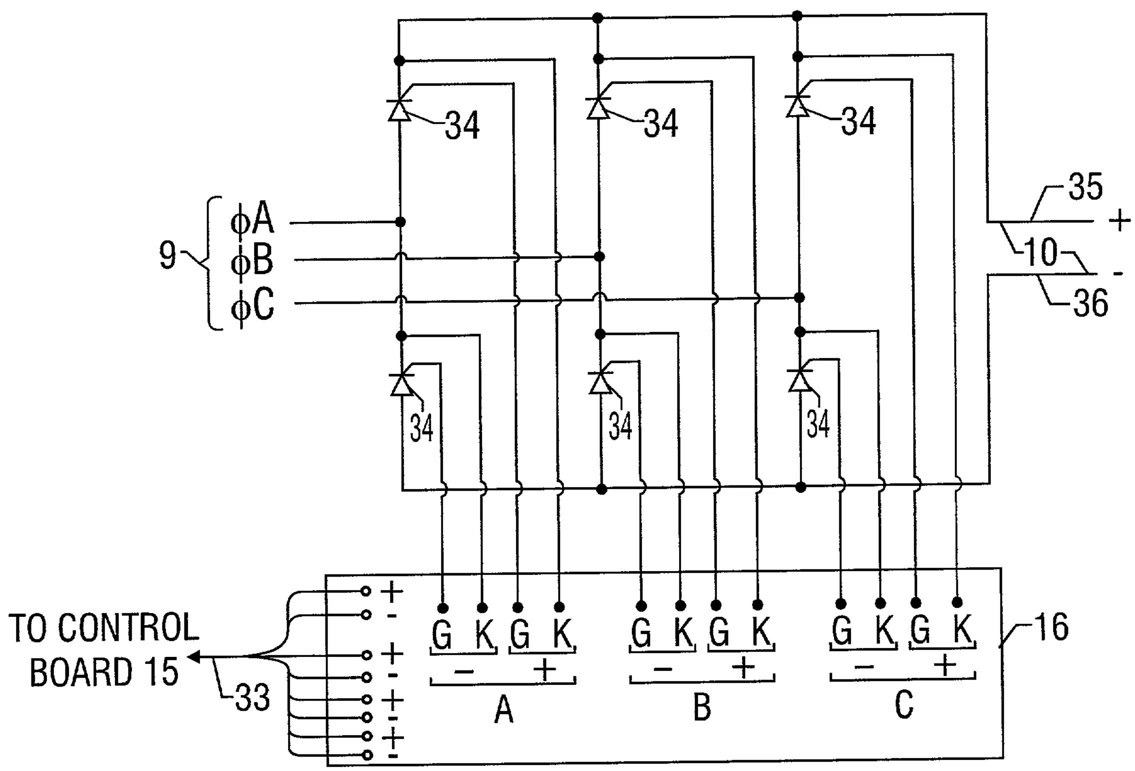


FIG. 5

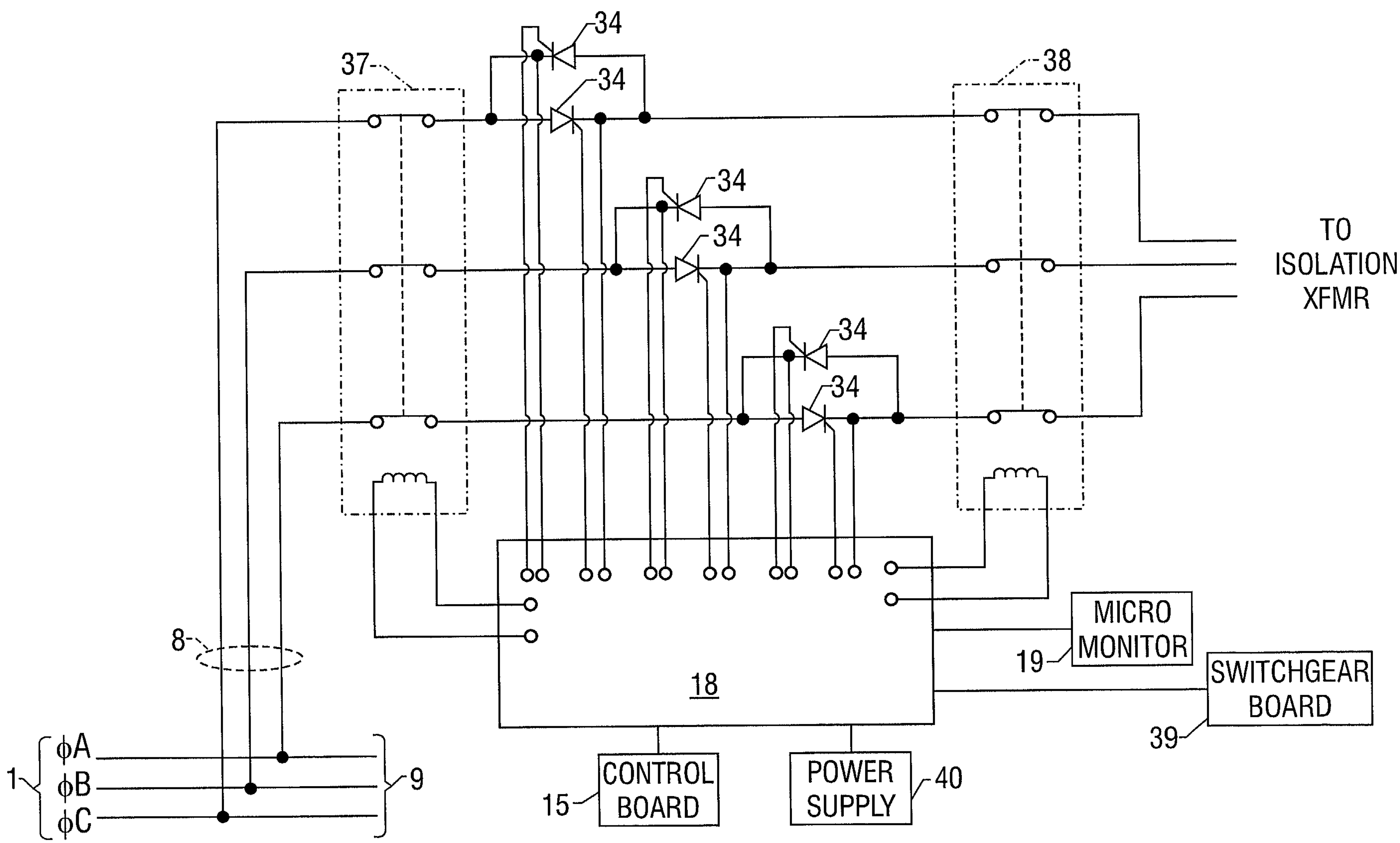


FIG. 6

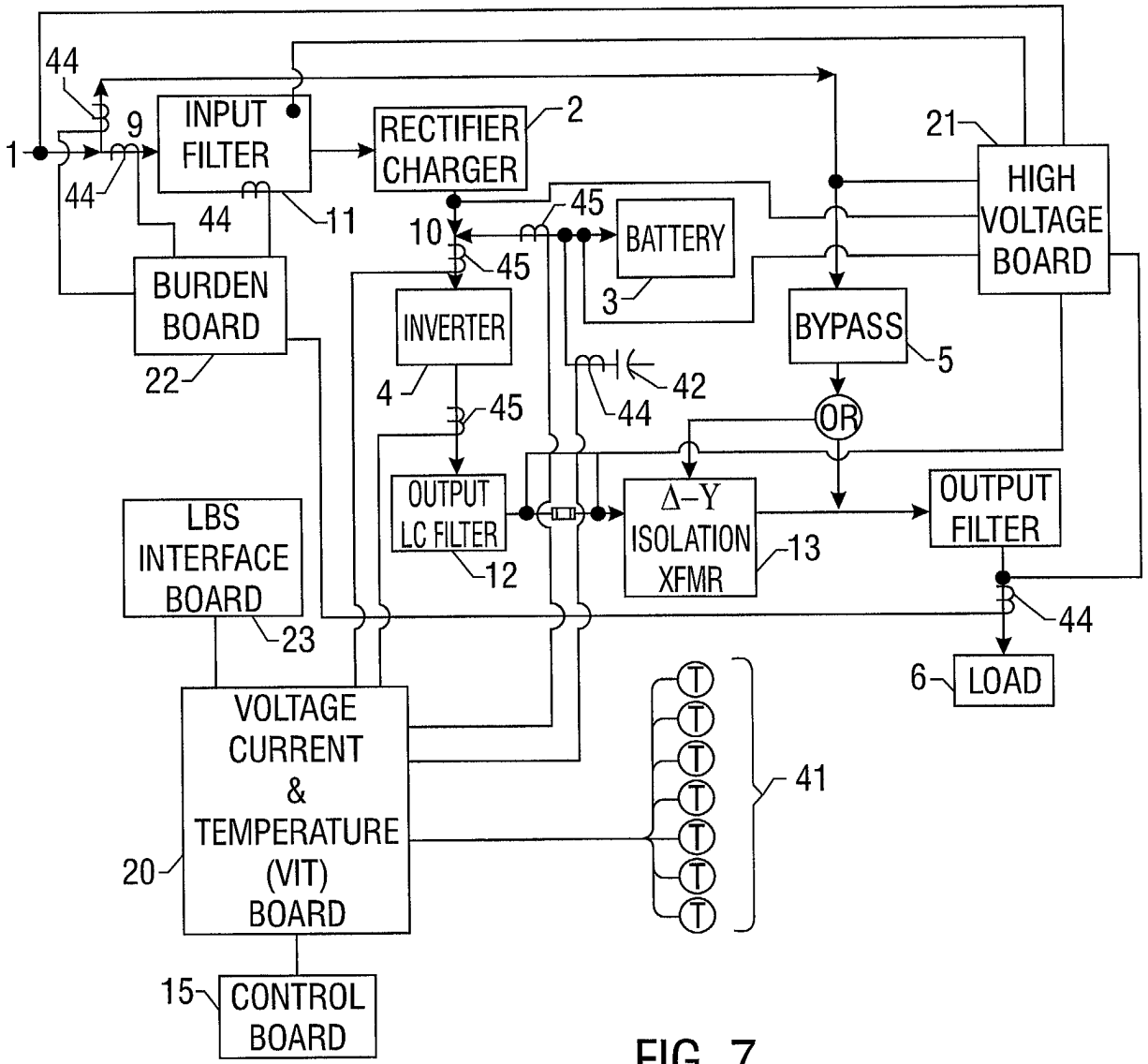


FIG. 7

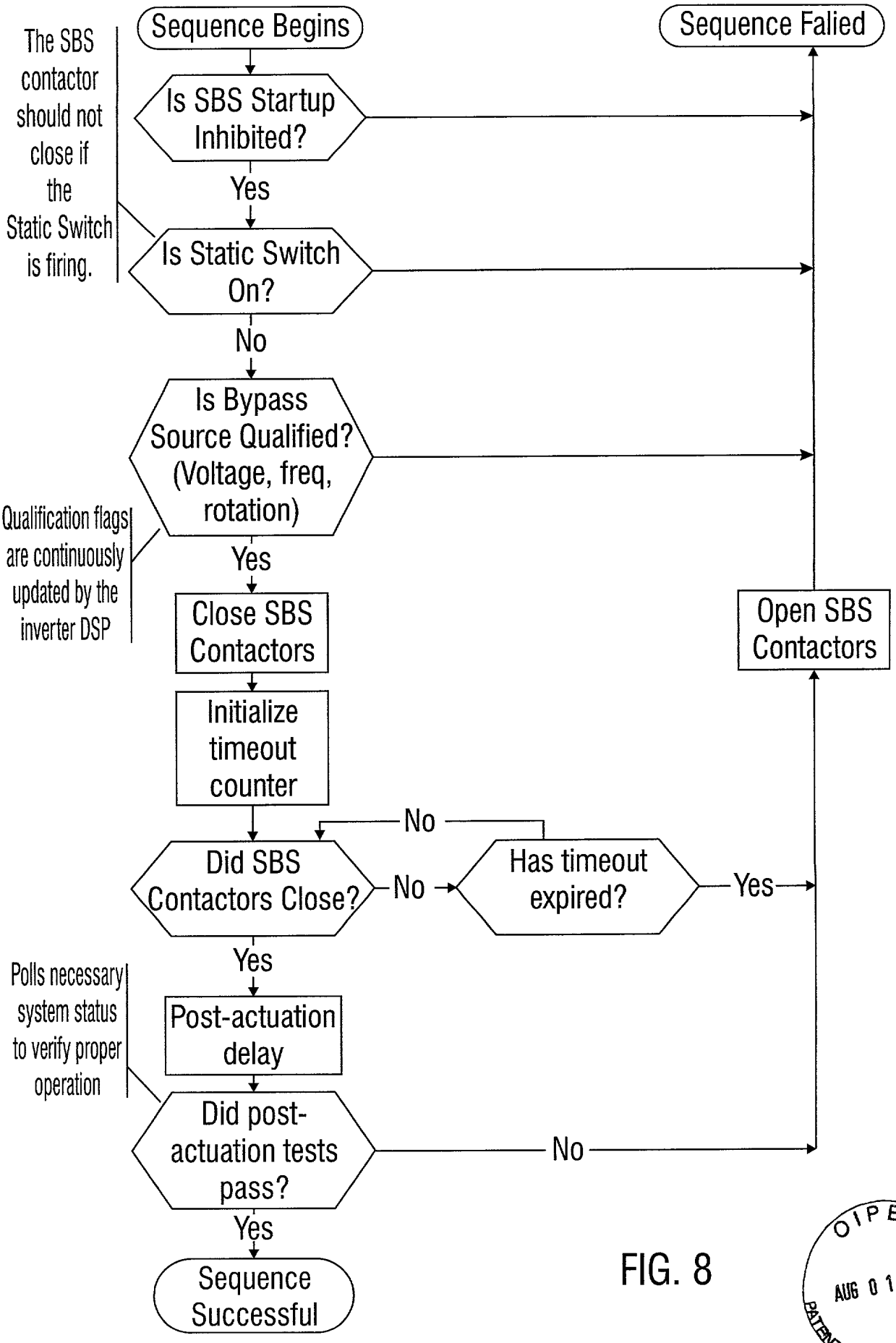


FIG. 8

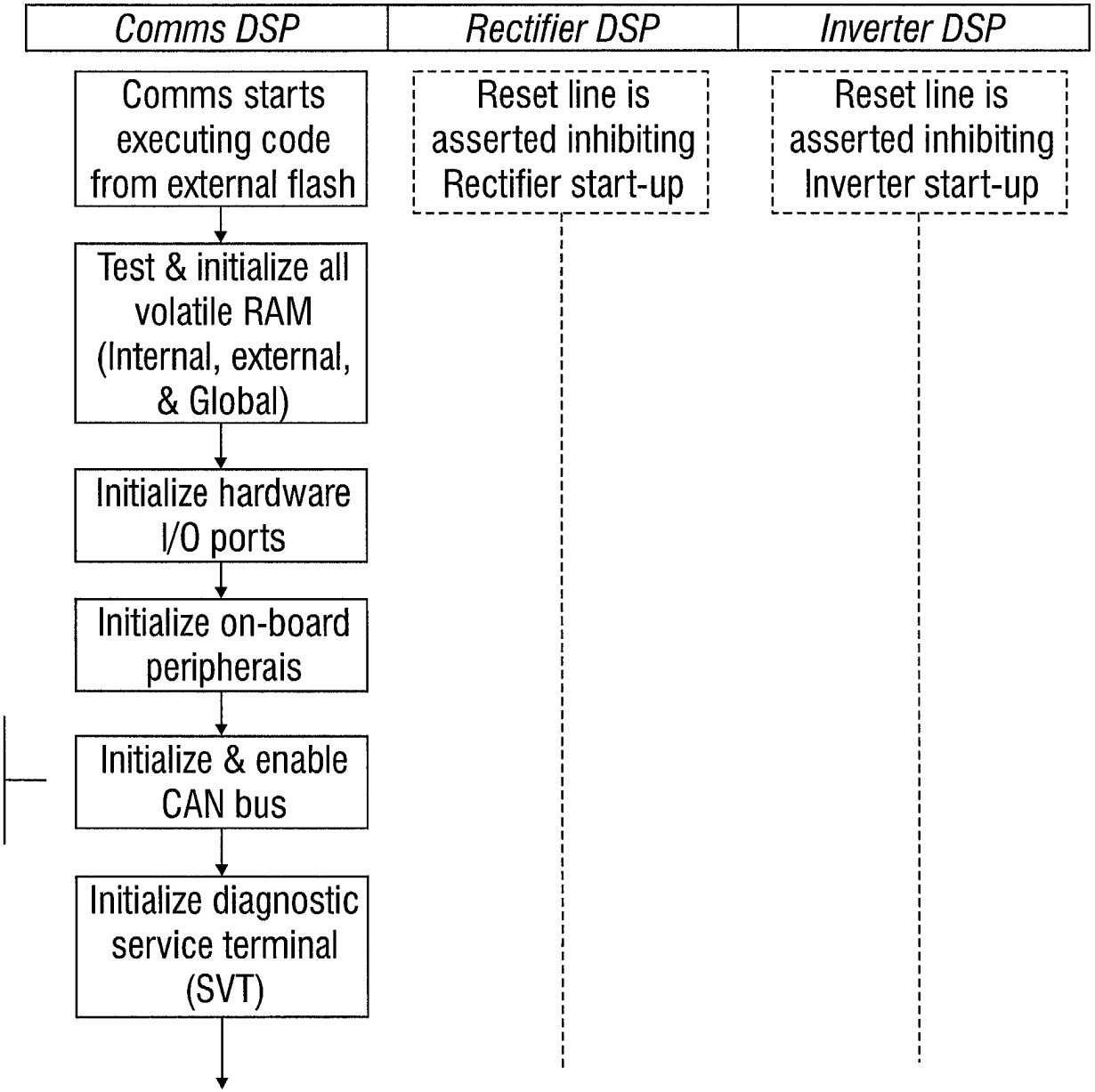


FIG. 8A-1

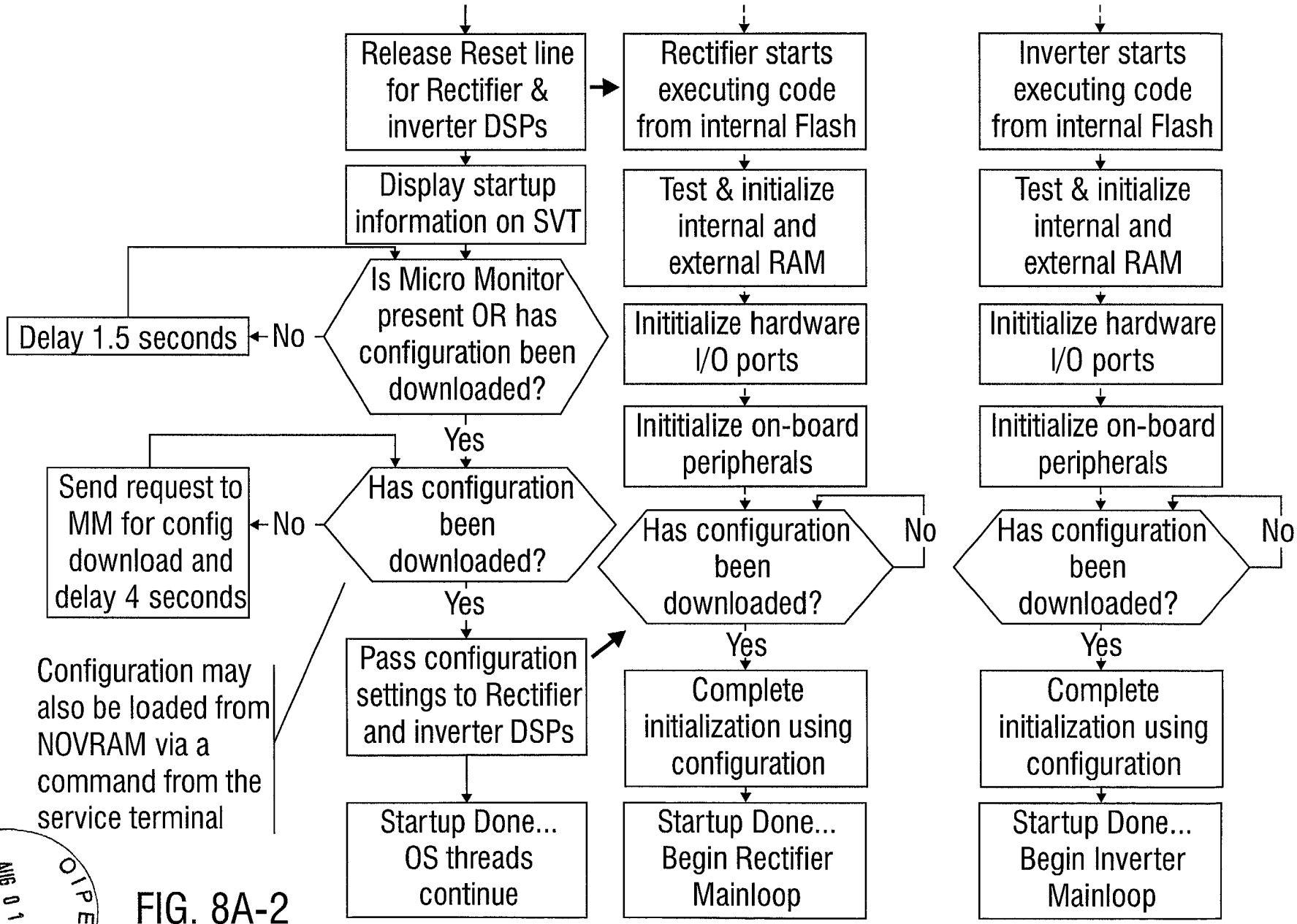


FIG. 8A-2

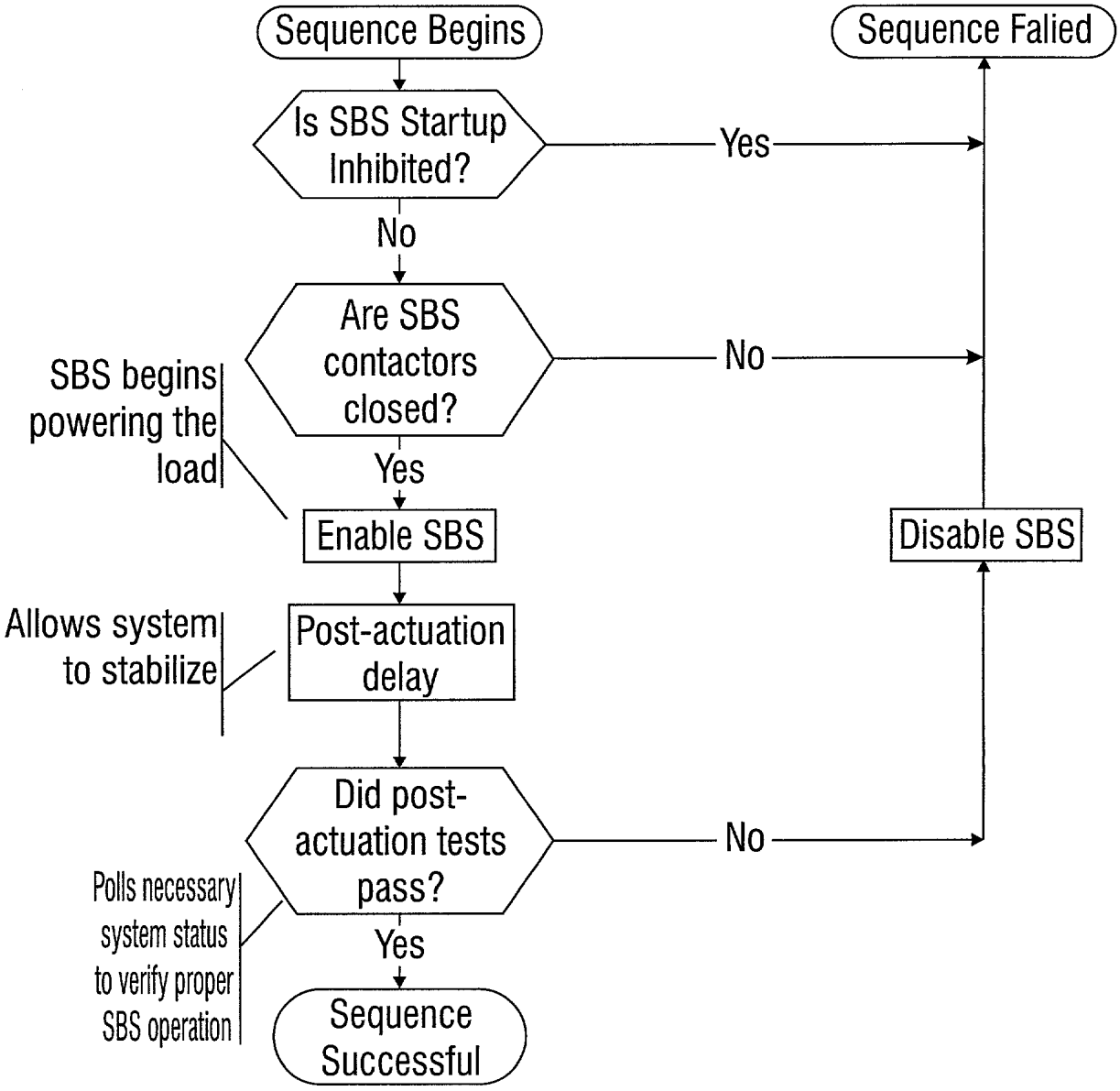


FIG. 9

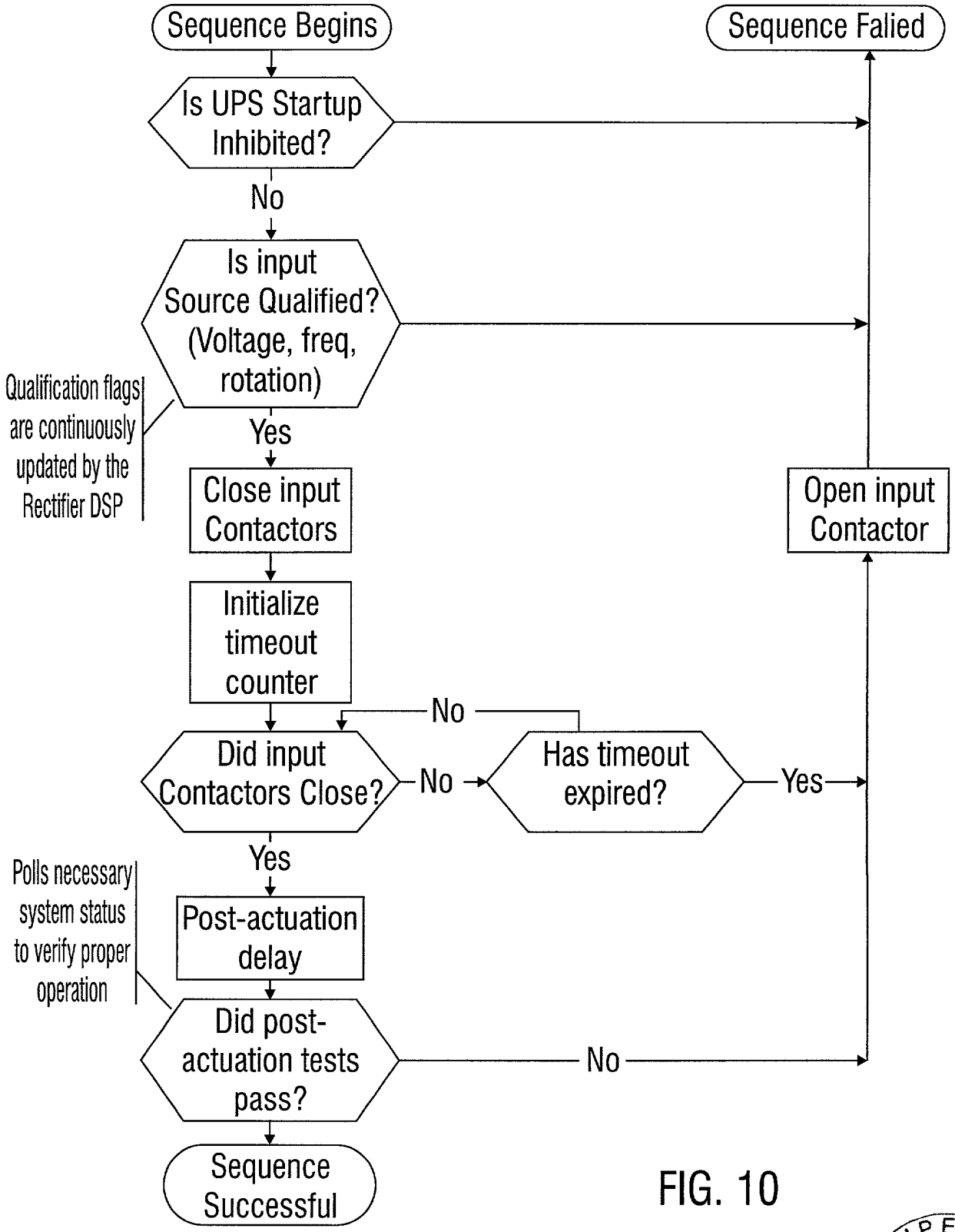


FIG. 10

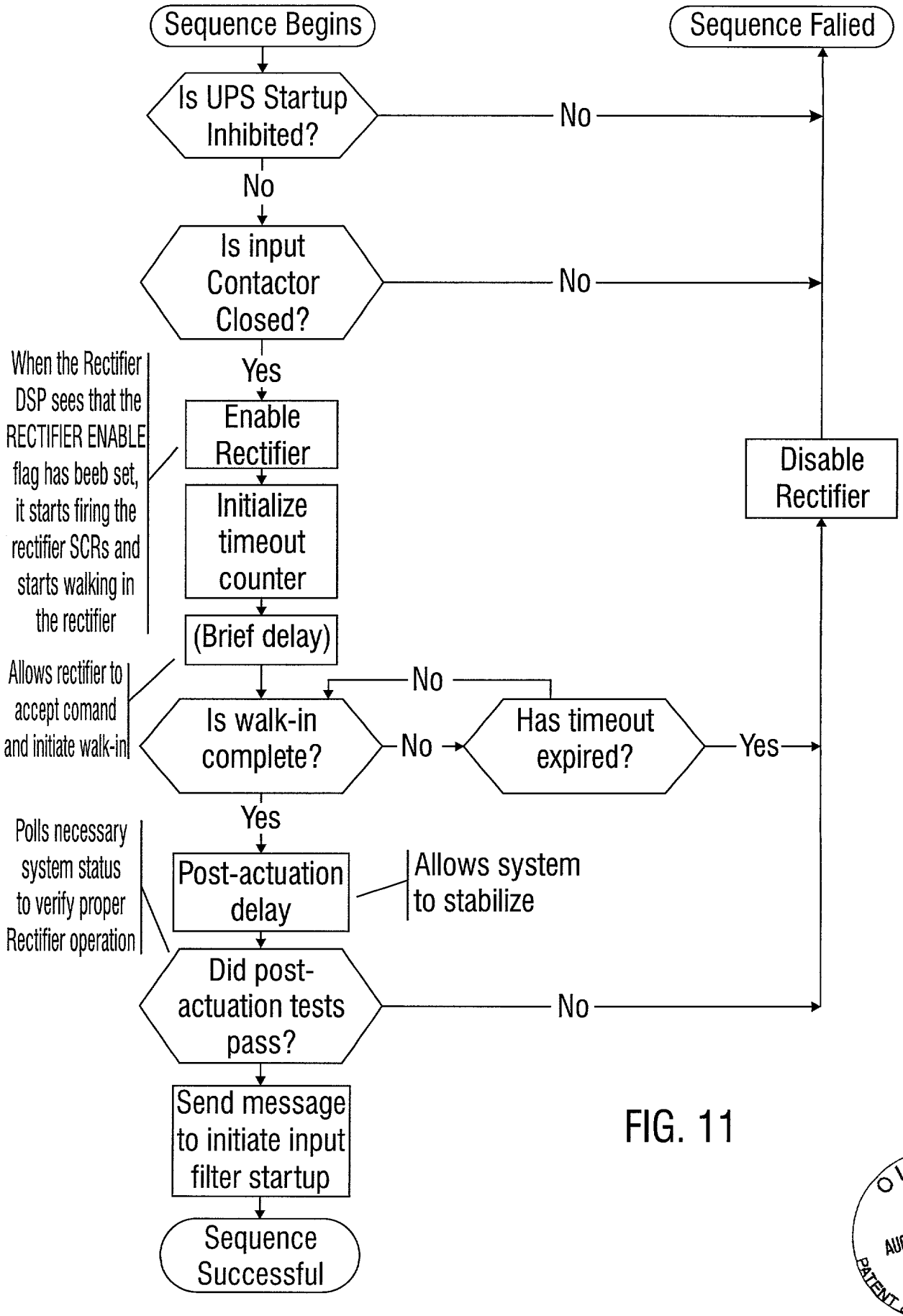


FIG. 11

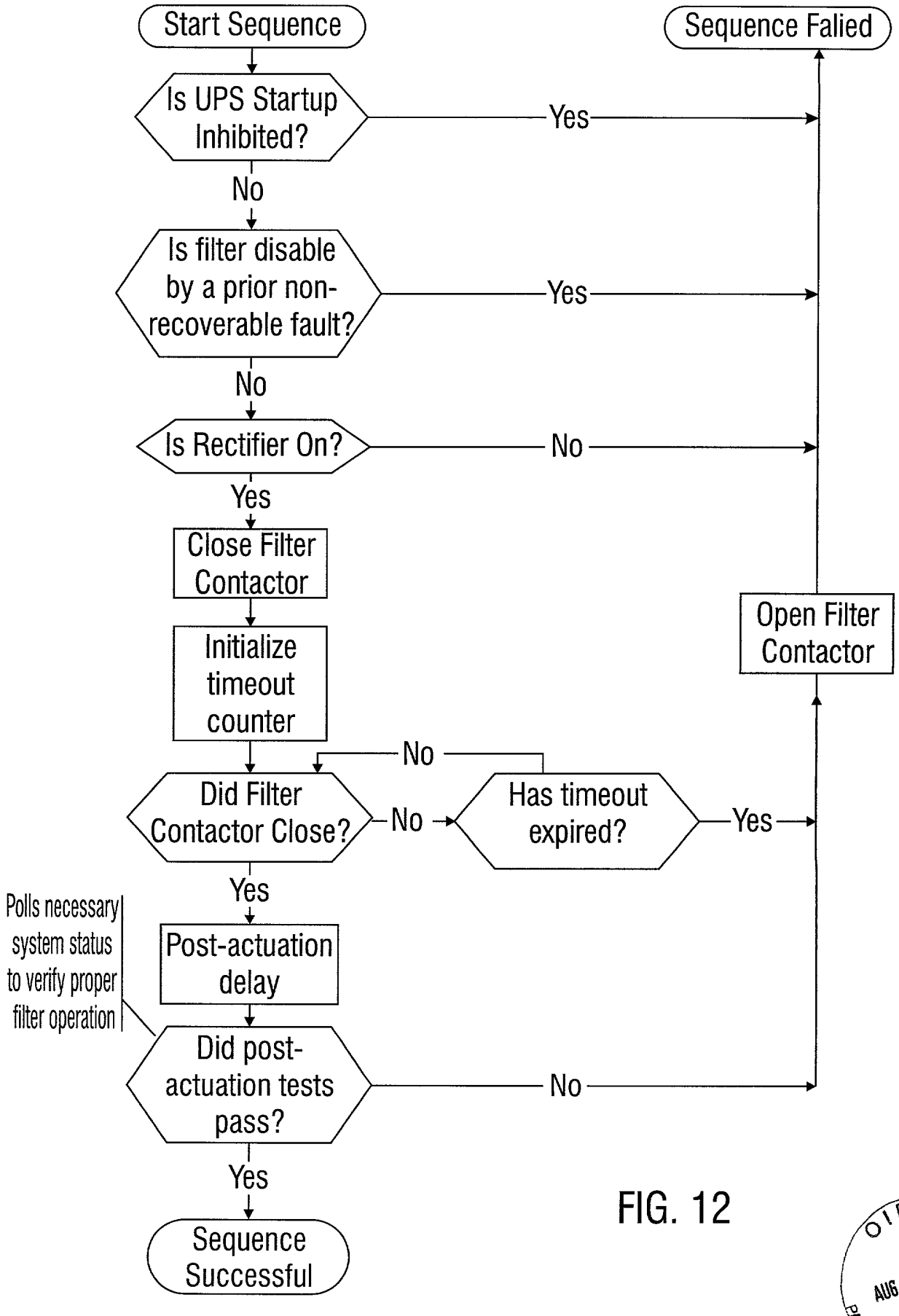


FIG. 12

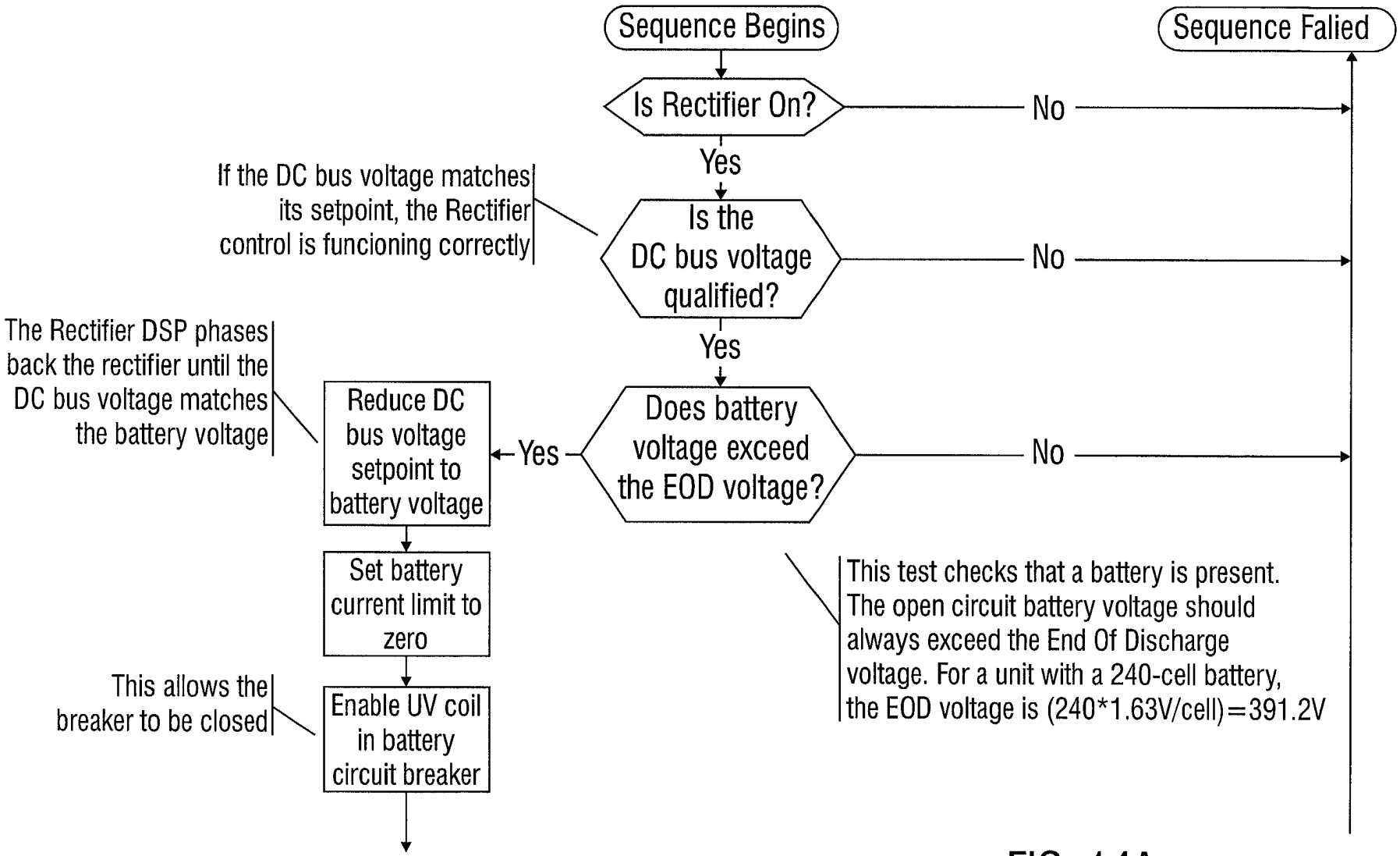


FIG. 14A

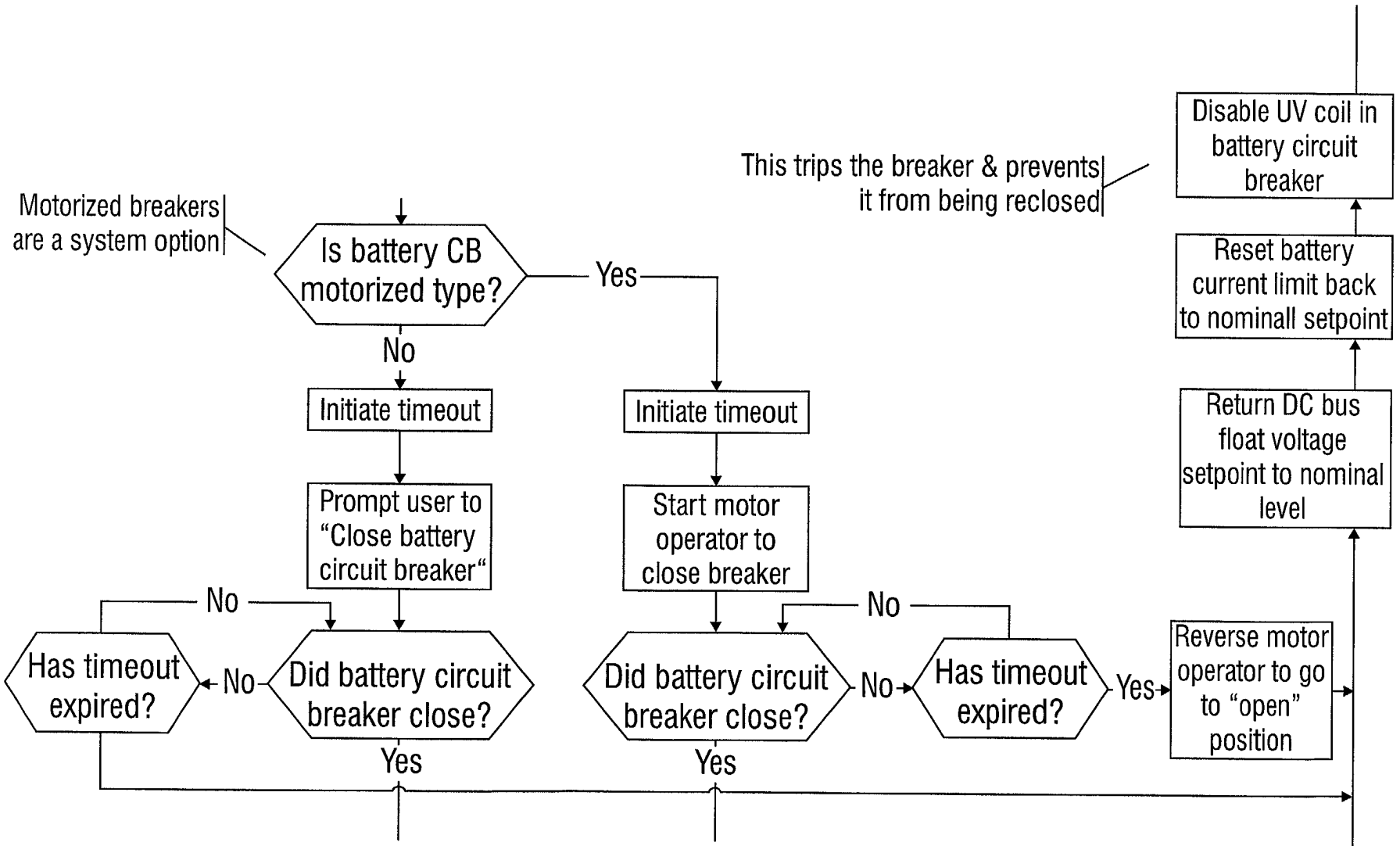


FIG. 14B

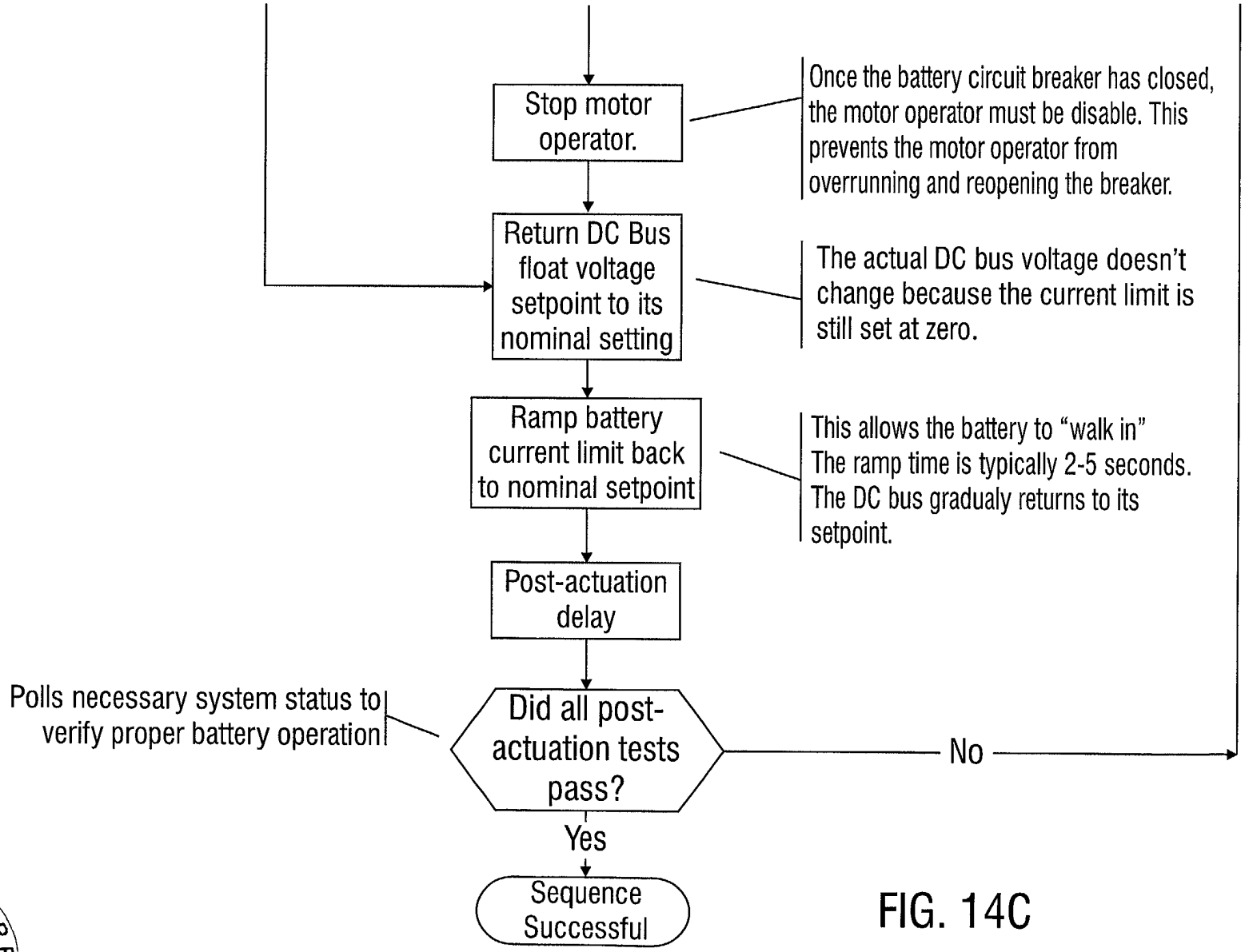


FIG. 14C

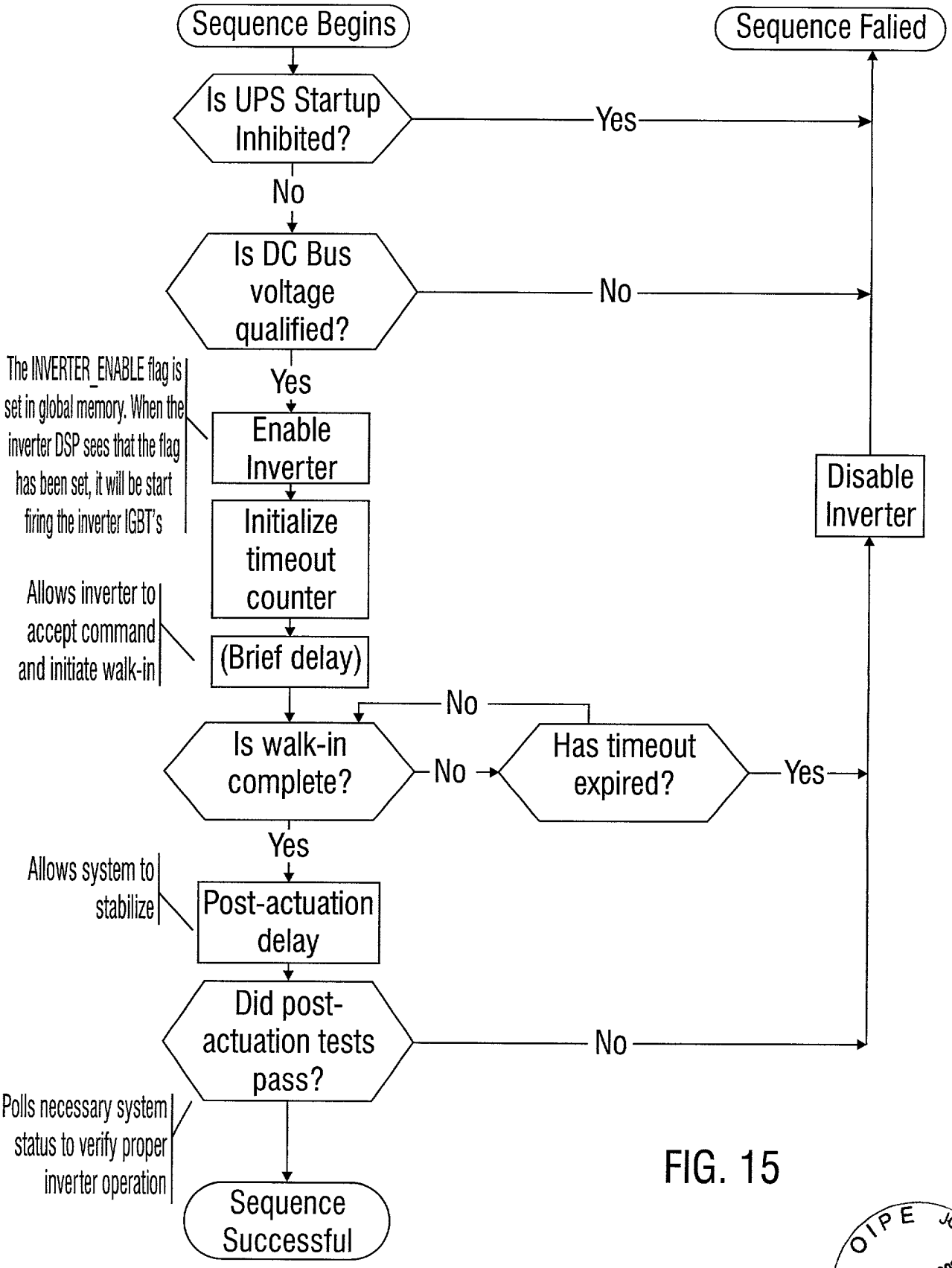
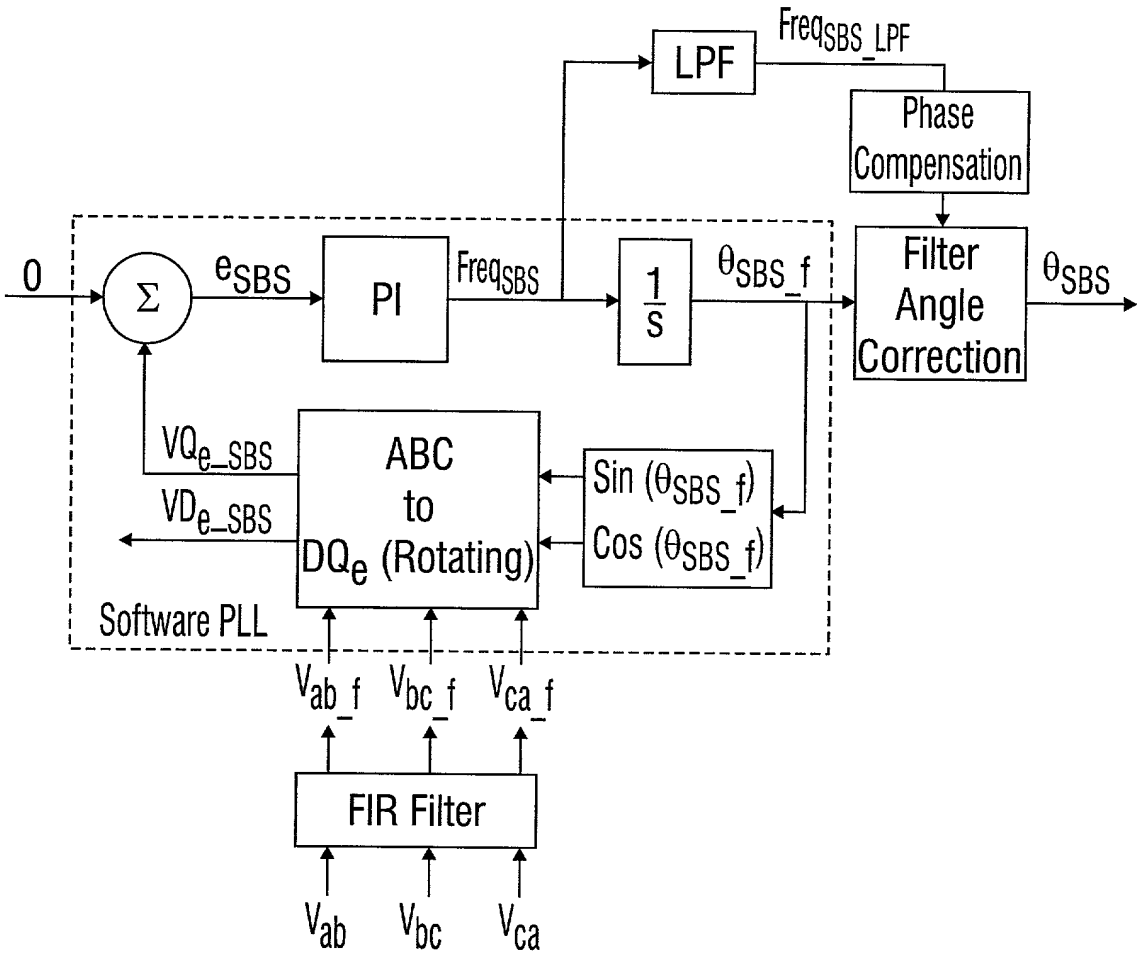


FIG. 15



Static Bypass Switch L-L Voltage

FIG. 16

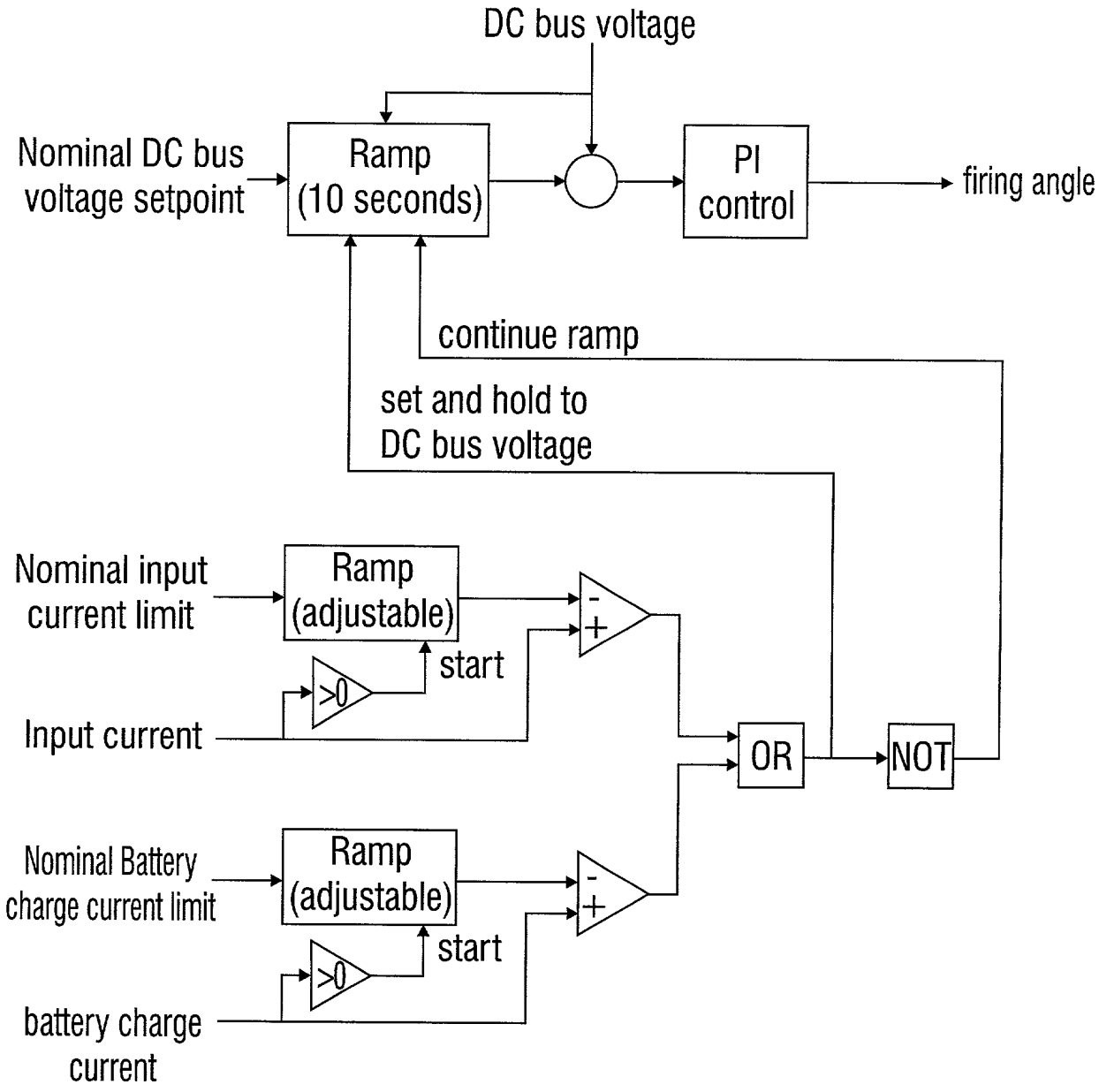


FIG. 17A

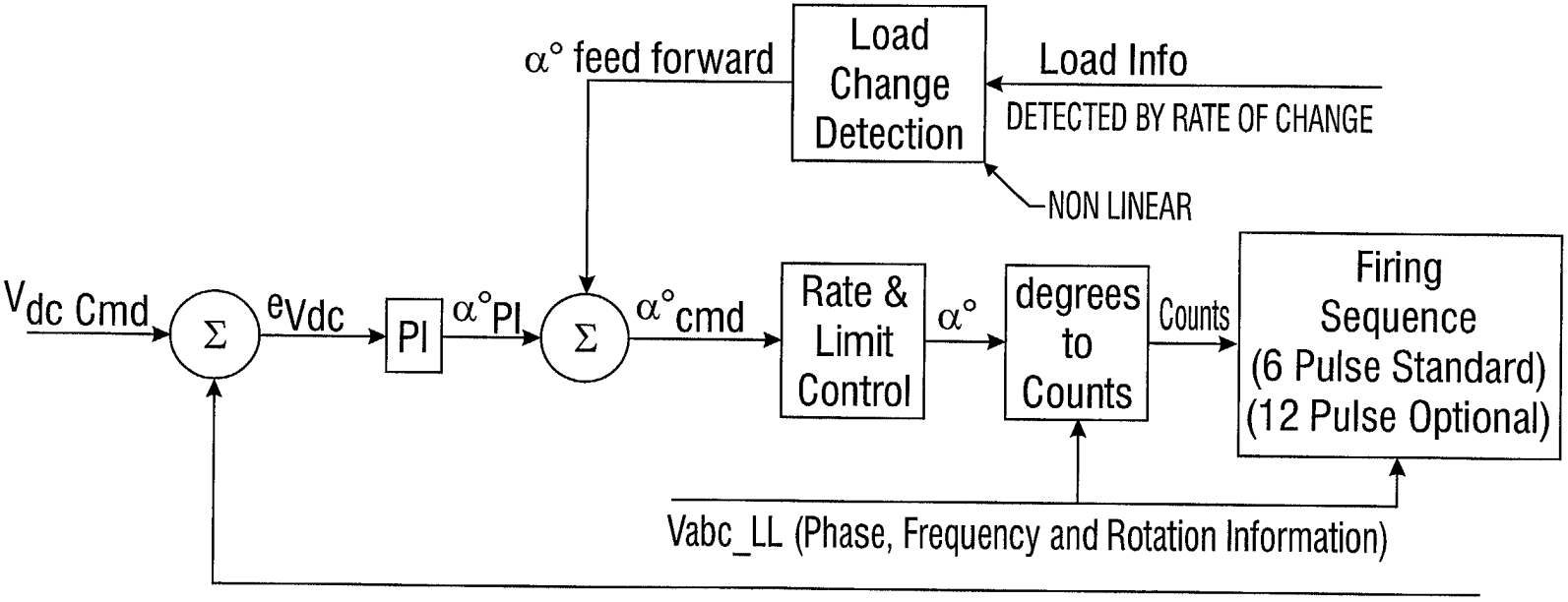


FIG. 17B

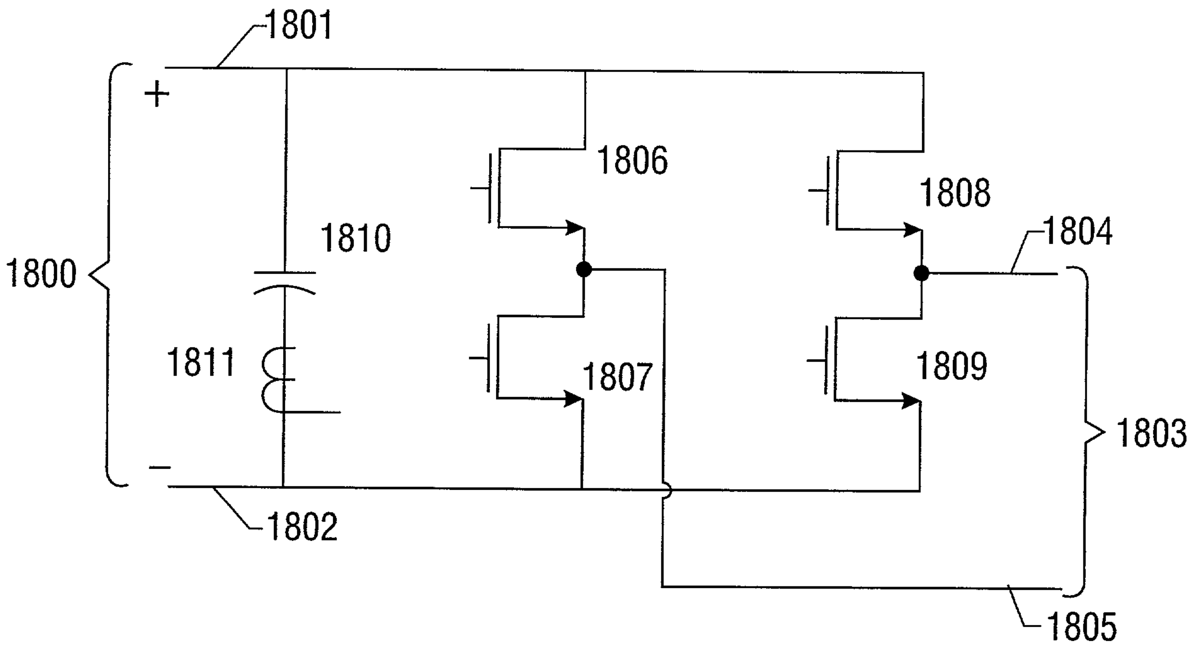


FIG. 18A

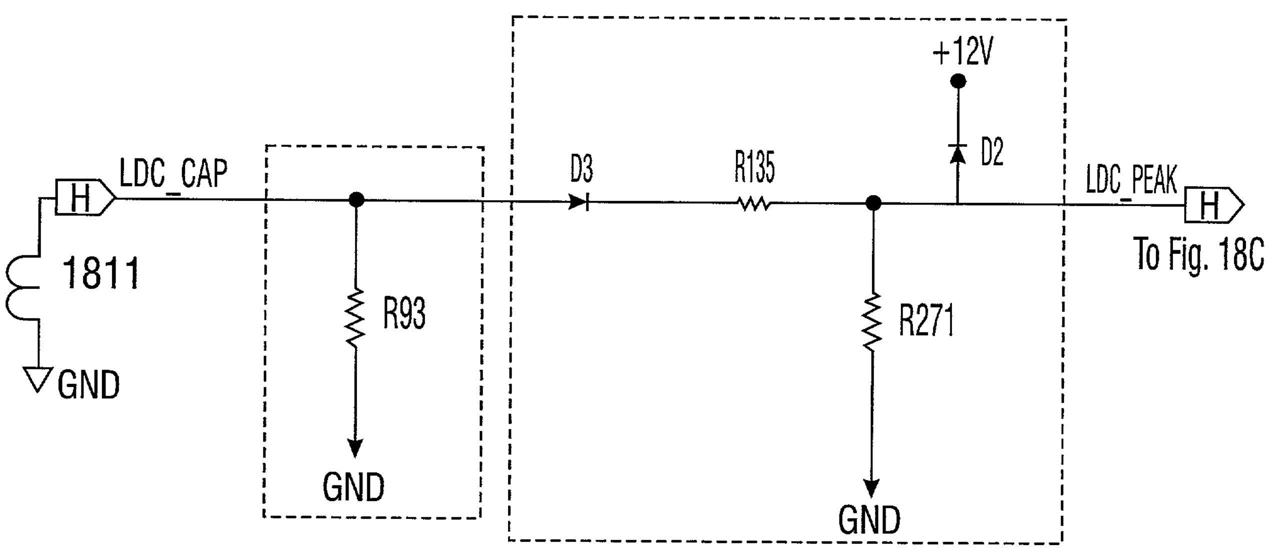


FIG. 18B

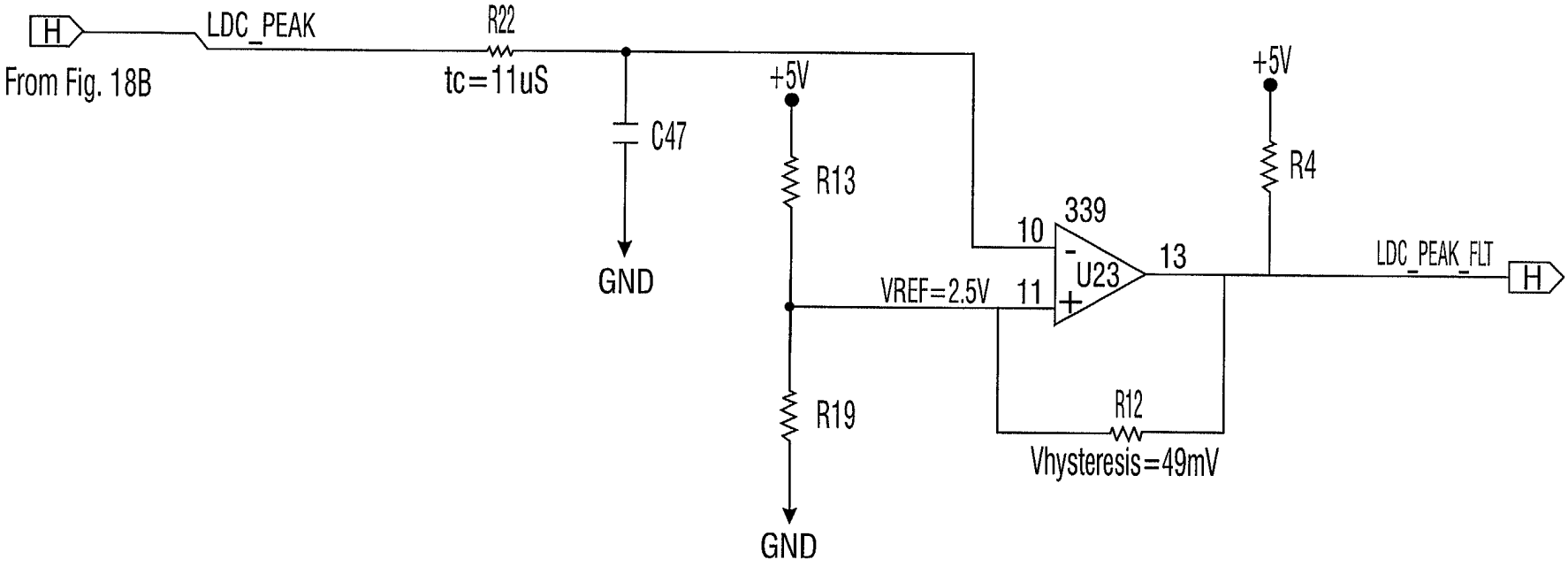


FIG. 18C

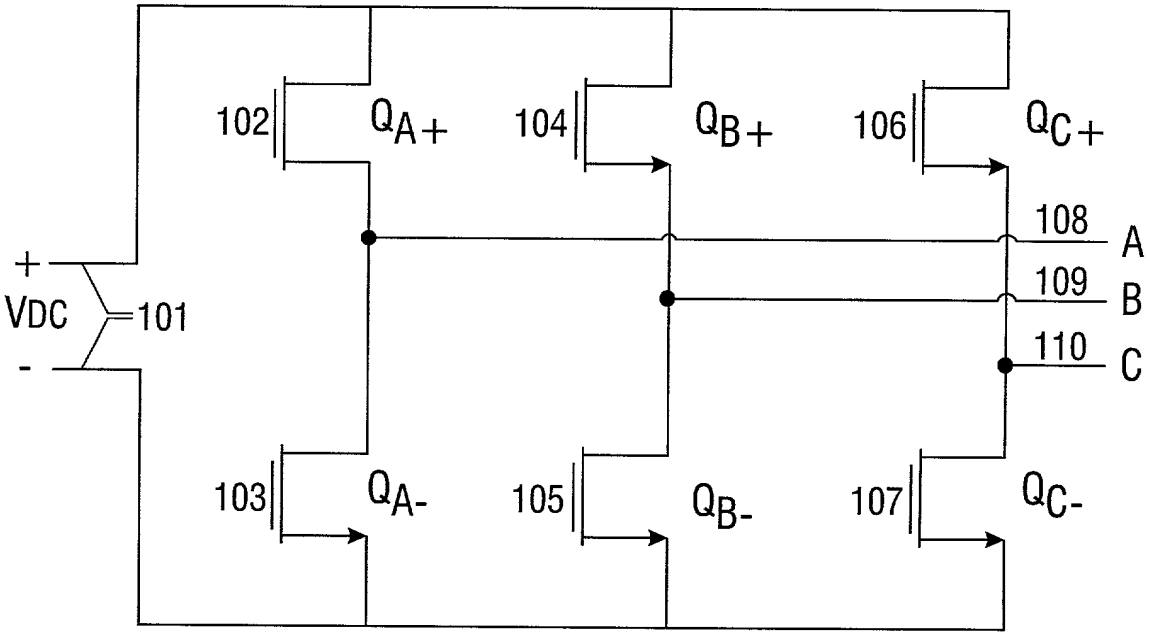


FIG. 19

Switch (0=OFF, i=ON)			Line to Neutral Voltage Vectors					Line to Line Voltage Vectors				
S_{C+}	S_{B+}	S_{A+}	V_{AN}	V_{BN}	V_{CN}	$V=[V_{QS}\ V_{DS}]^T$	Vector	V_{AB}	V_{BC}	V_{CA}	$V=[V_{QS}\ V_{DS}]^T$	Vector
0	0	1	$2/3\ V_{dc}$	$-1/3\ V_{dc}$	$-1/3\ V_{dc}$	$2/3\ V_{dc}\angle 0°$	$\overrightarrow{V_1}$	V_{dc}	0	$-V_{dc}$	$2/\sqrt{3}\ V_{dc}\angle -30°$	$\overrightarrow{V_1}$
1	0	1	$1/3\ V_{dc}$	$-2/3\ V_{dc}$	$1/3\ V_{dc}$	$2/3\ V_{dc}\angle 60°$	$\overrightarrow{V_2}$	V_{dc}	$-V_{dc}$	0	$2/\sqrt{3}\ V_{dc}\angle 30°$	$\overrightarrow{V_2}$
1	0	0	$-1/3\ V_{dc}$	$-1/3\ V_{dc}$	$2/3\ V_{dc}$	$2/3\ V_{dc}\angle 120°$	$\overrightarrow{V_3}$	0	$-V_{dc}$	V_{dc}	$2/\sqrt{3}\ V_{dc}\angle 90°$	$\overrightarrow{V_3}$
1	1	0	$-2/3\ V_{dc}$	$1/3\ V_{dc}$	$1/3\ V_{dc}$	$2/3\ V_{dc}\angle 180°$	$\overrightarrow{V_4}$	$-V_{dc}$	0	V_{dc}	$2/\sqrt{3}\ V_{dc}\angle 150°$	$\overrightarrow{V_4}$
0	1	0	$-1/3\ V_{dc}$	$2/3\ V_{dc}$	$-1/3\ V_{dc}$	$2/3\ V_{dc}\angle 240°$	$\overrightarrow{V_5}$	$-V_{dc}$	V_{dc}	0	$2/\sqrt{3}\ V_{dc}\angle 210°$	$\overrightarrow{V_5}$
0	1	1	$1/3\ V_{dc}$	$1/3\ V_{dc}$	$-2/3\ V_{dc}$	$2/3\ V_{dc}\angle 300°$	$\overrightarrow{V_6}$	0	V_{dc}	$-V_{dc}$	$2/\sqrt{3}\ V_{dc}\angle 270°$	$\overrightarrow{V_6}$
0	0	0	0	0	0	0	$\overrightarrow{V_7}$	0	0	0	0	$\overrightarrow{V_7}$
1	1	1	0	0	0	0	$\overrightarrow{V_8}$	0	0	0	0	$\overrightarrow{V_8}$

FIG. 20

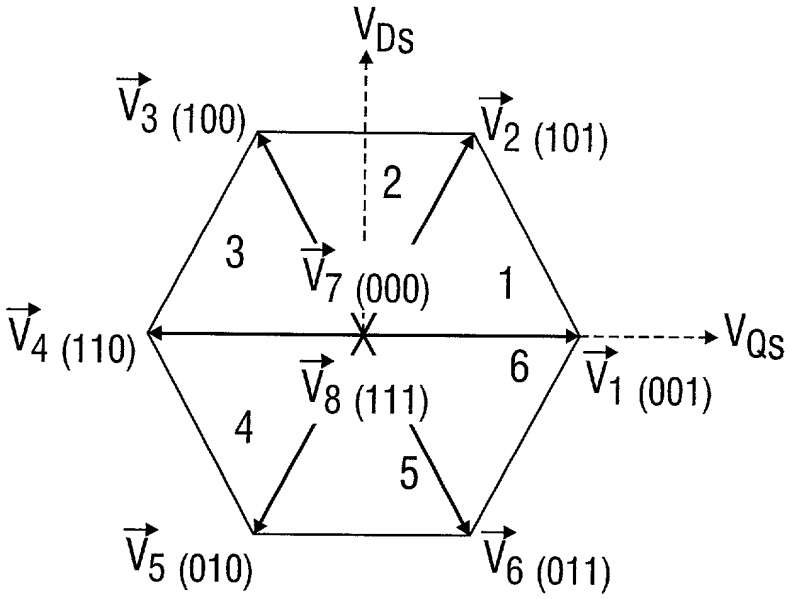


FIG. 21A

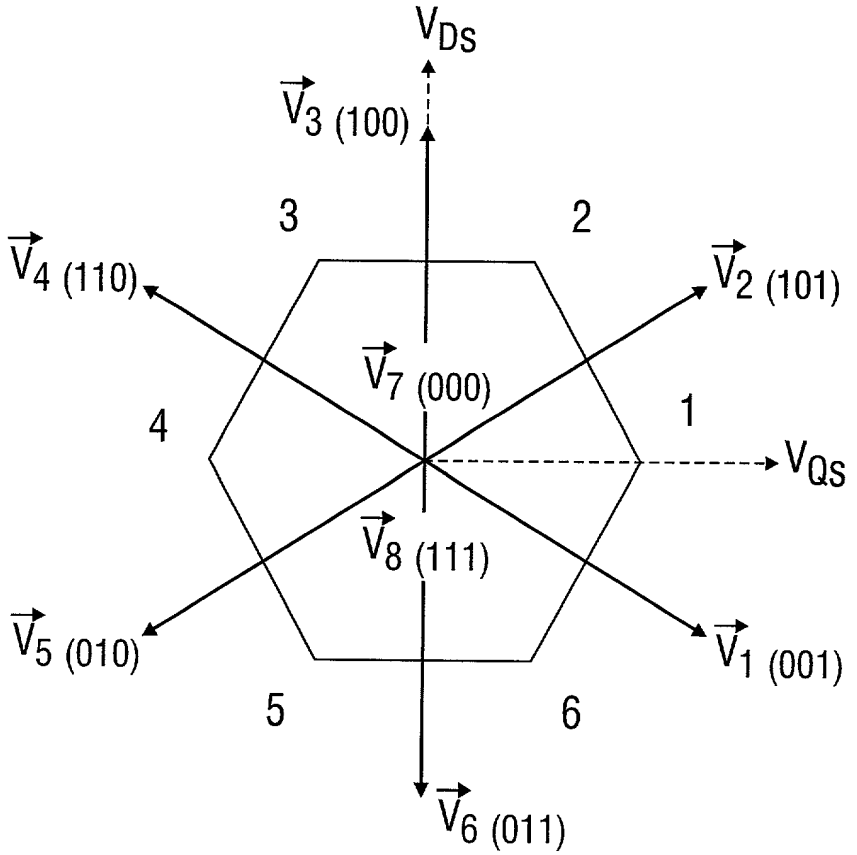


FIG. 21B

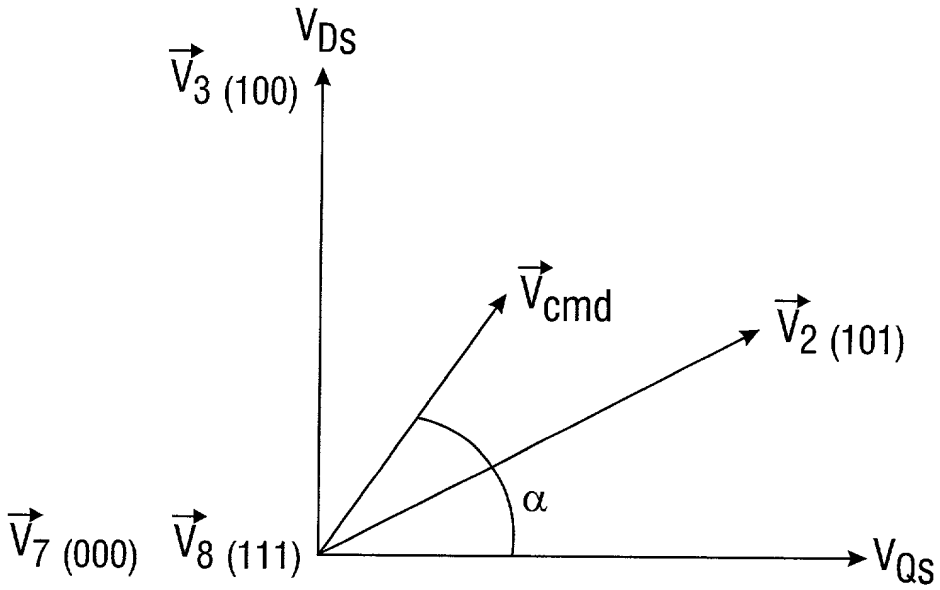


FIG. 22A

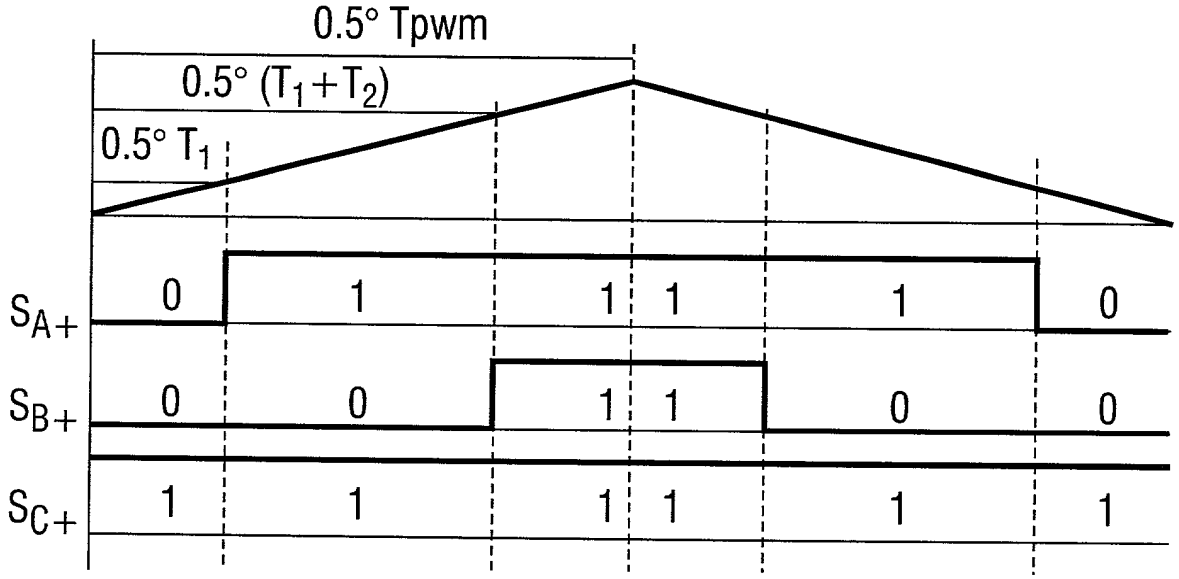


FIG. 22B

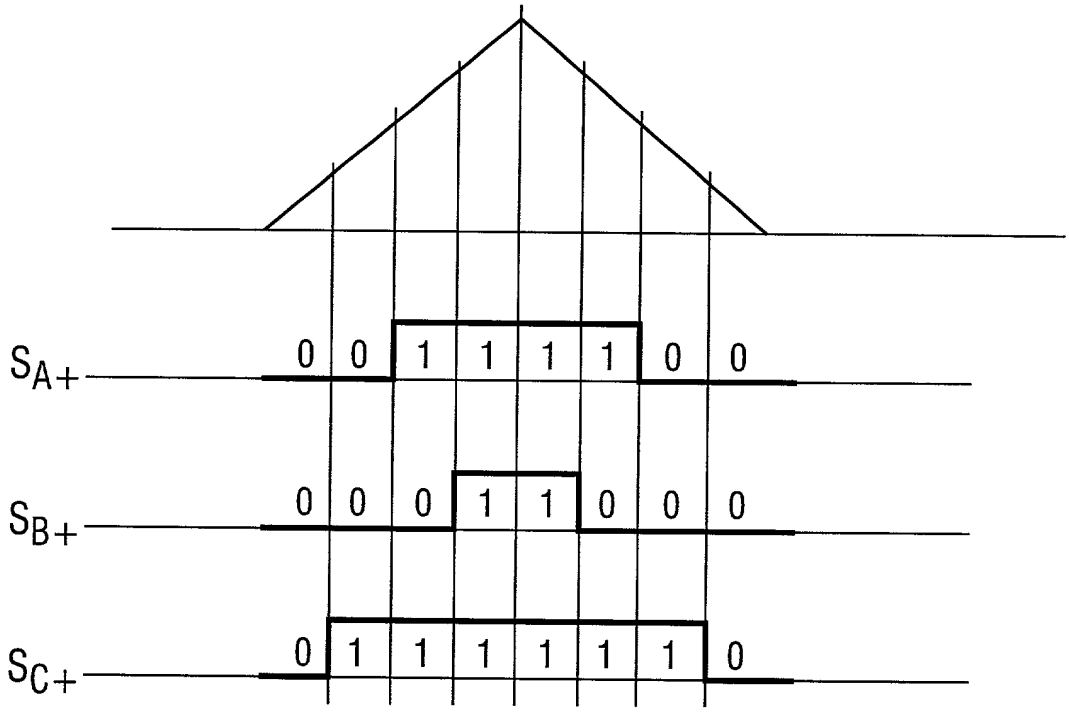


FIG. 22C

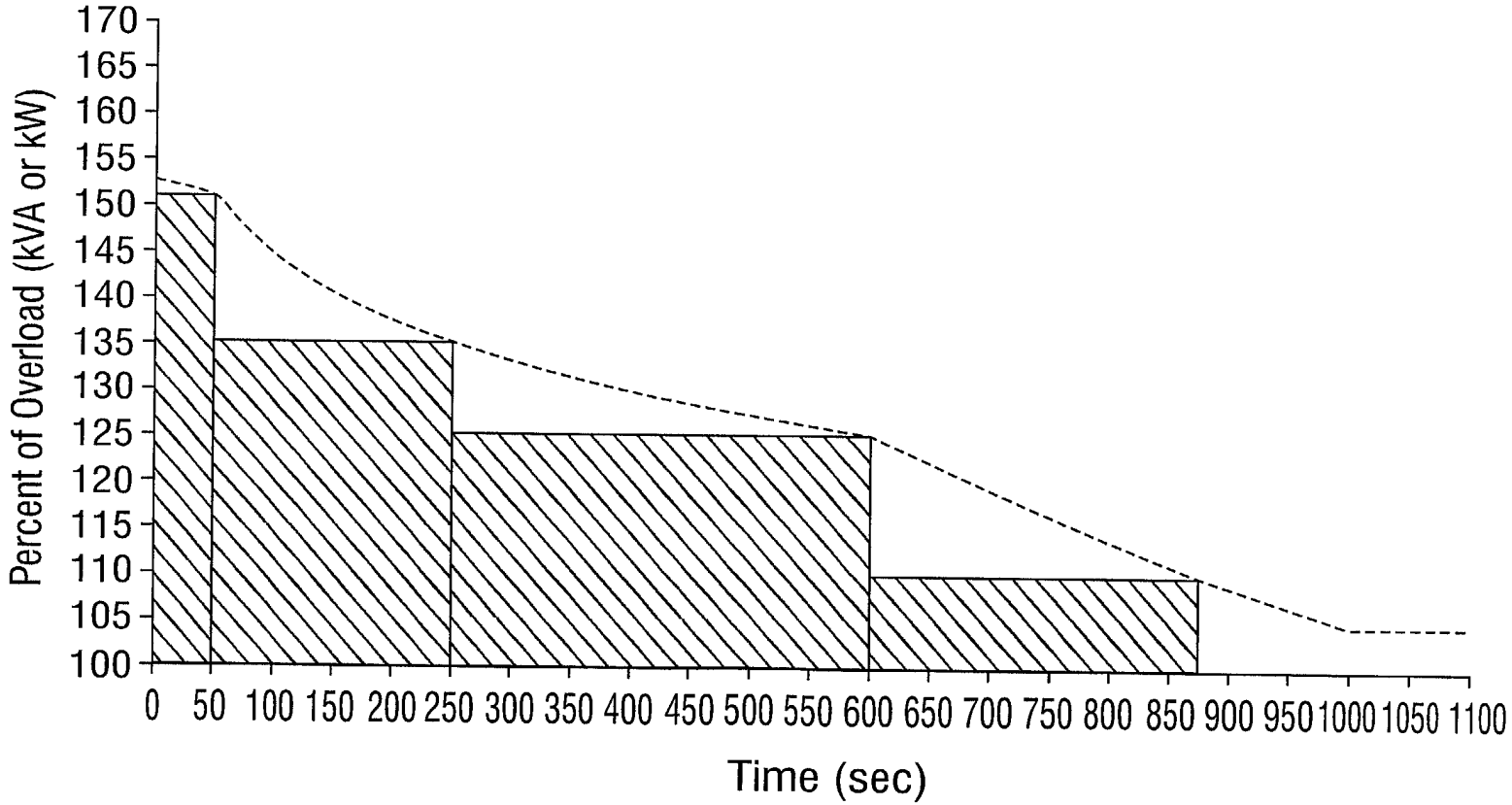


FIG. 23

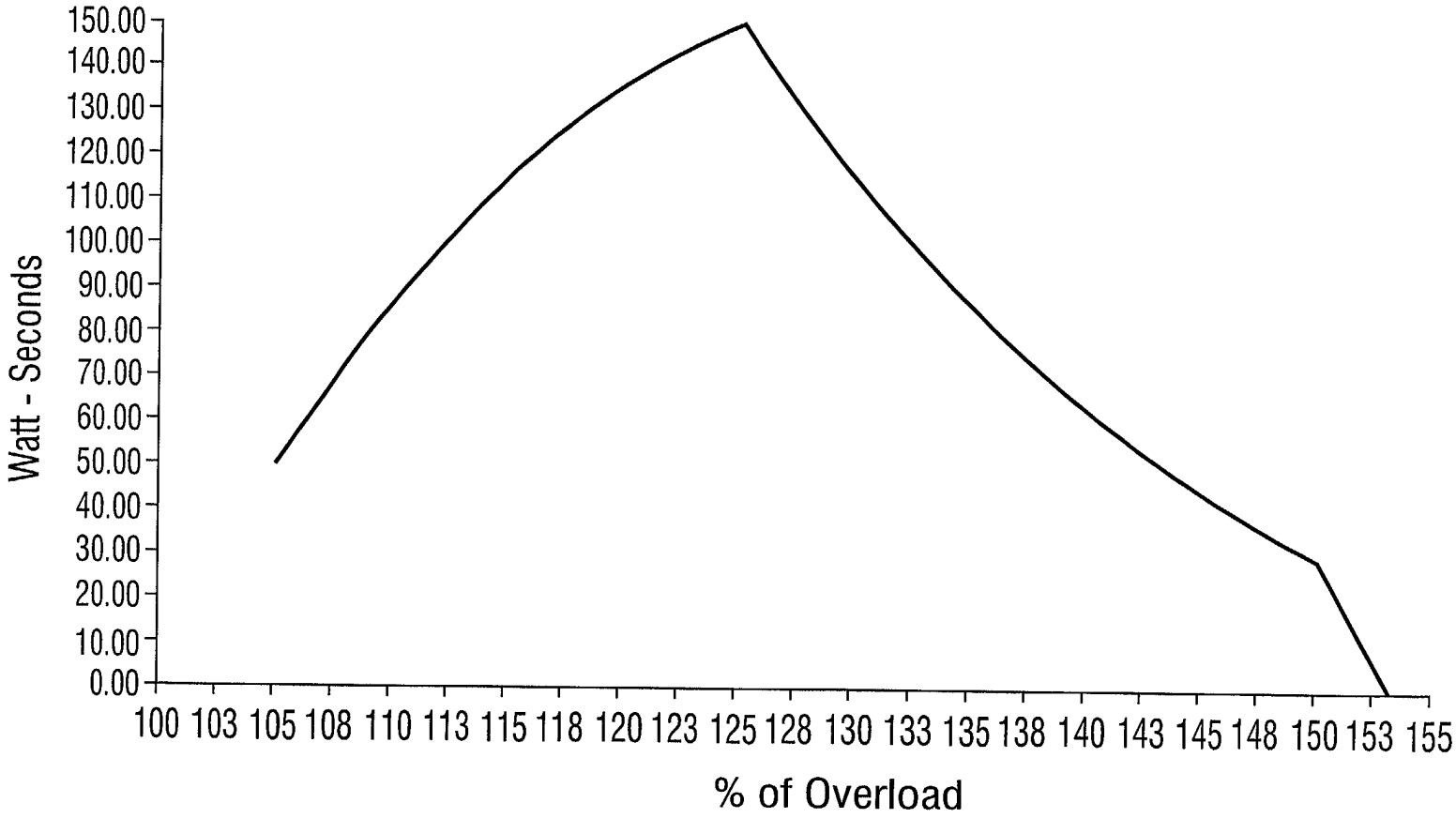


FIG. 24

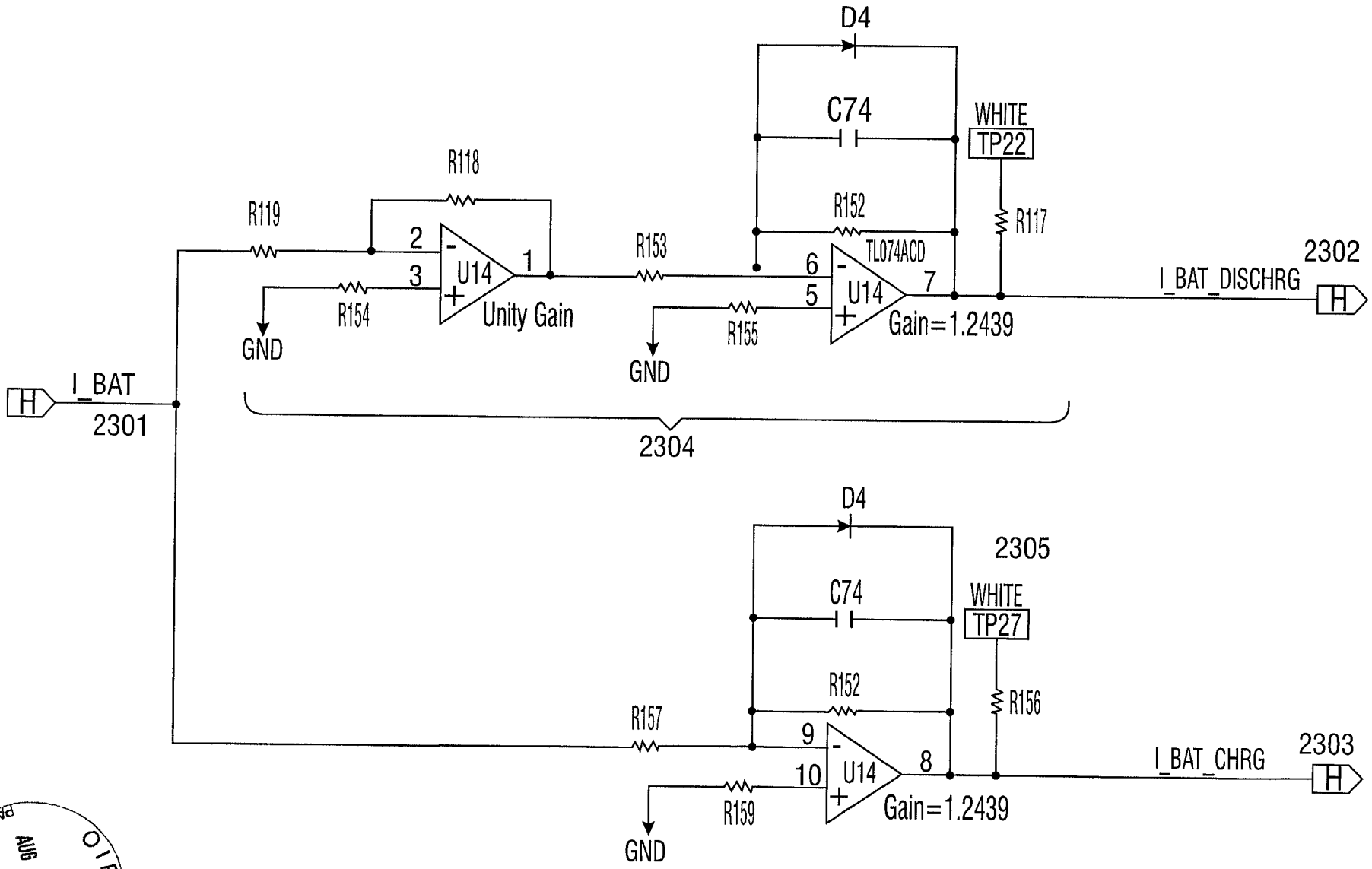


FIG. 25

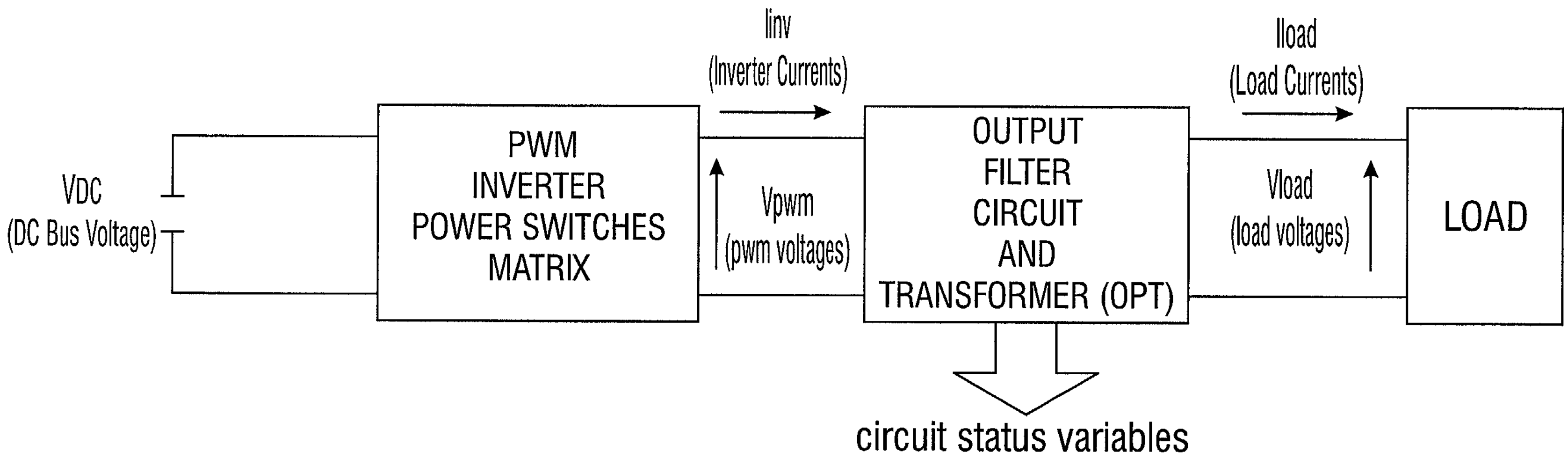


FIG. 26

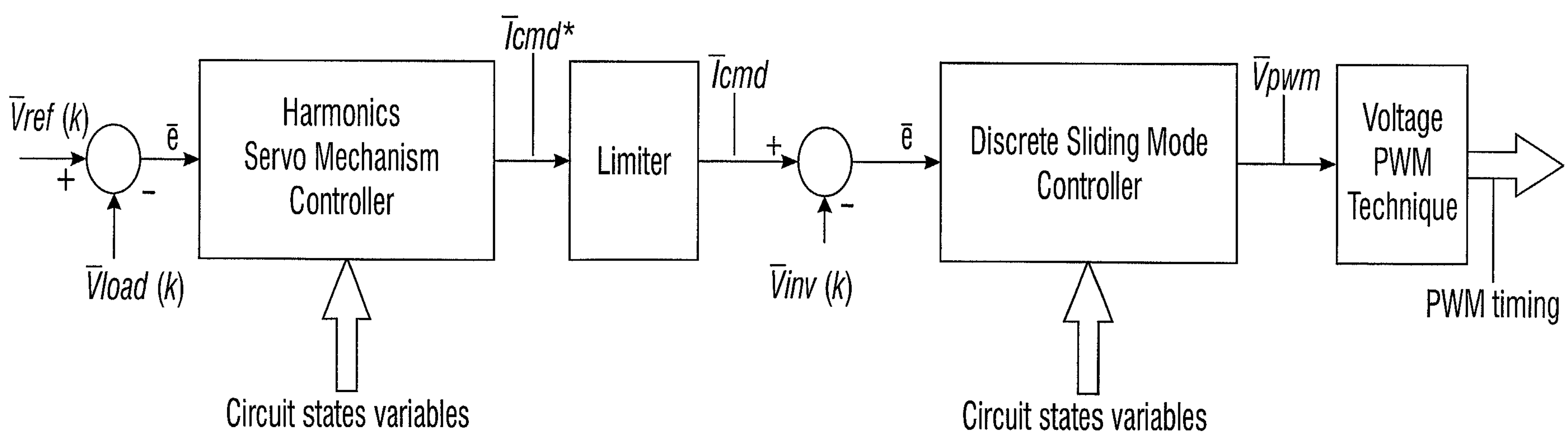


FIG. 27

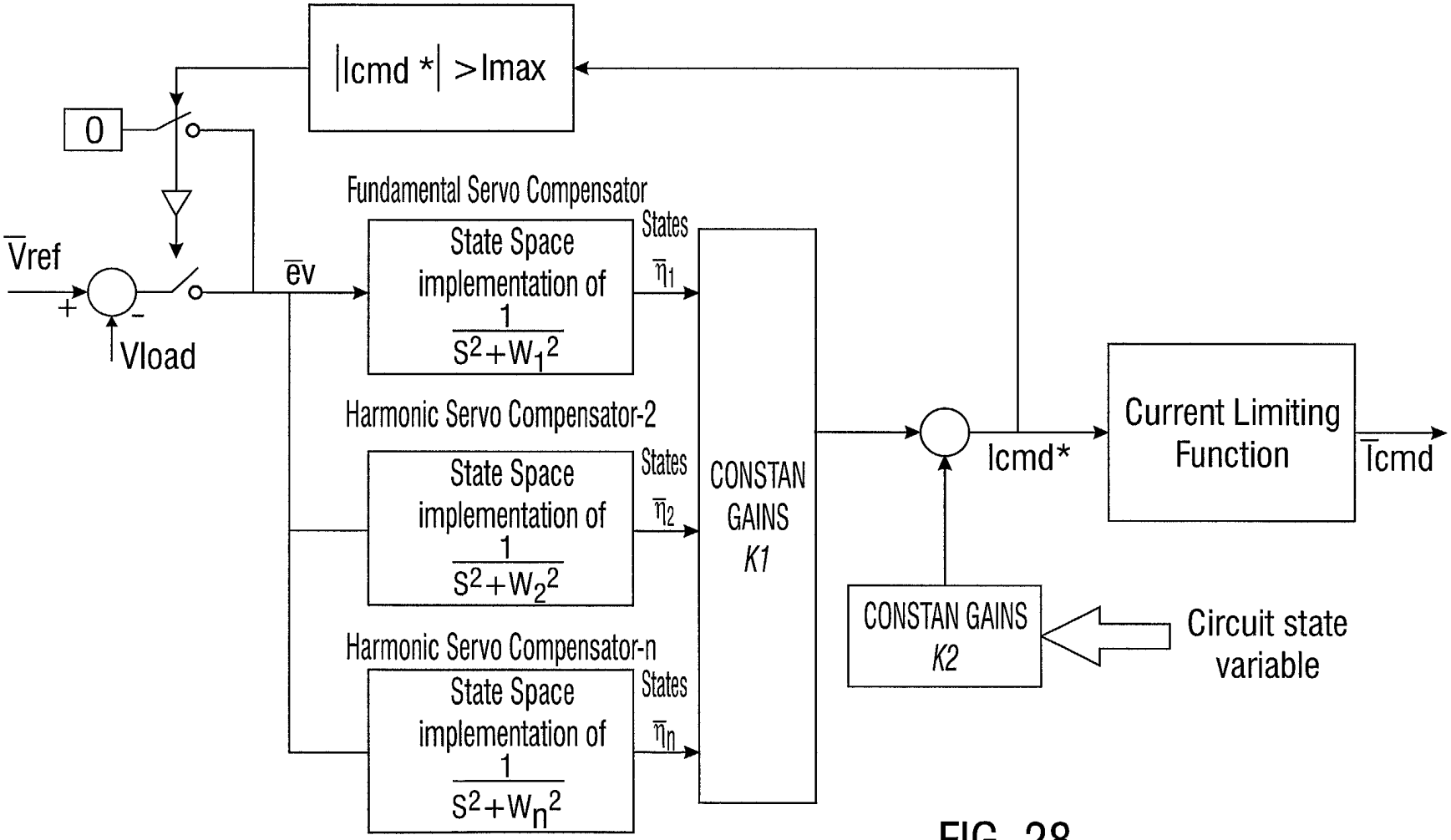


FIG. 28

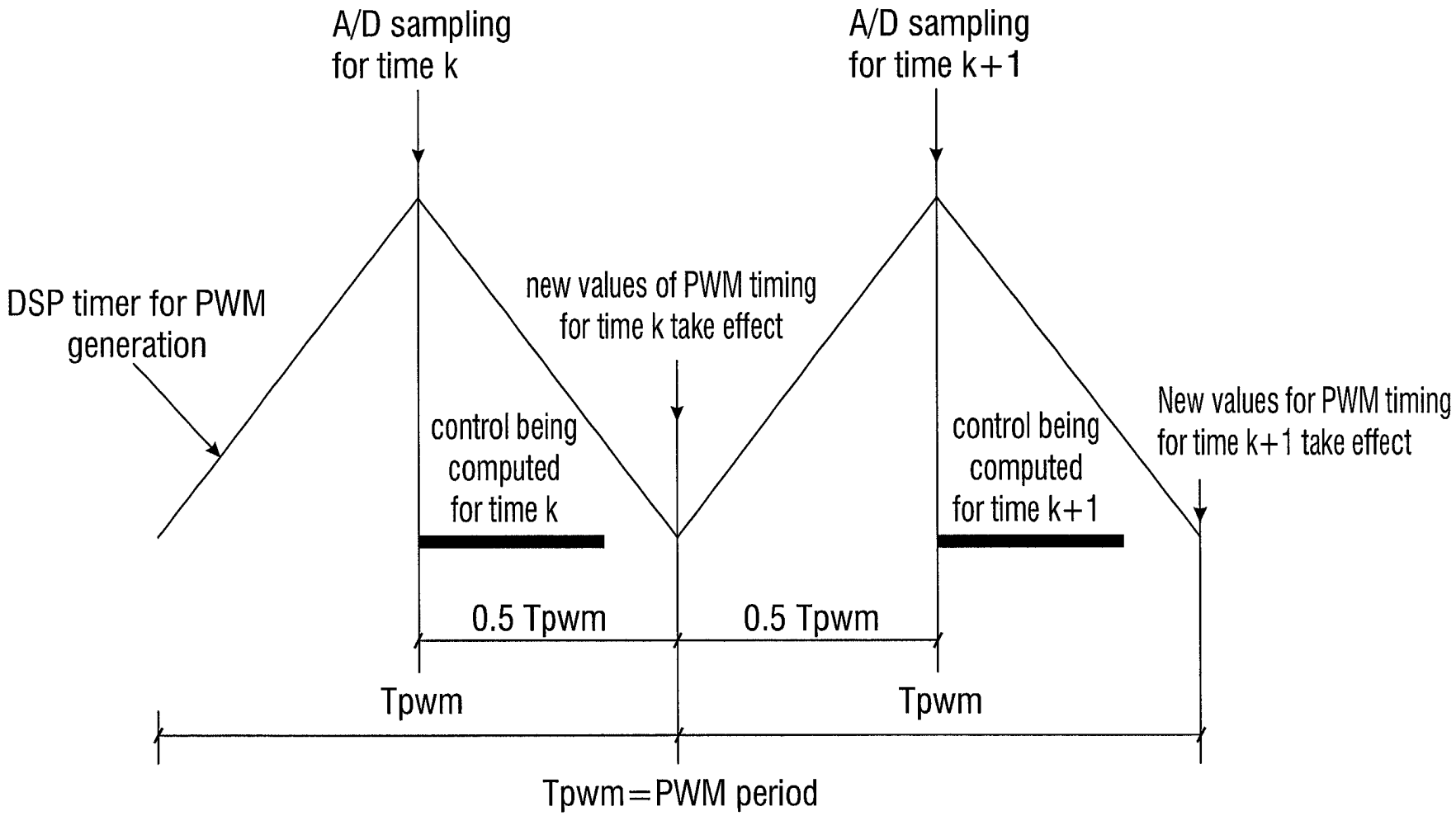


FIG. 29

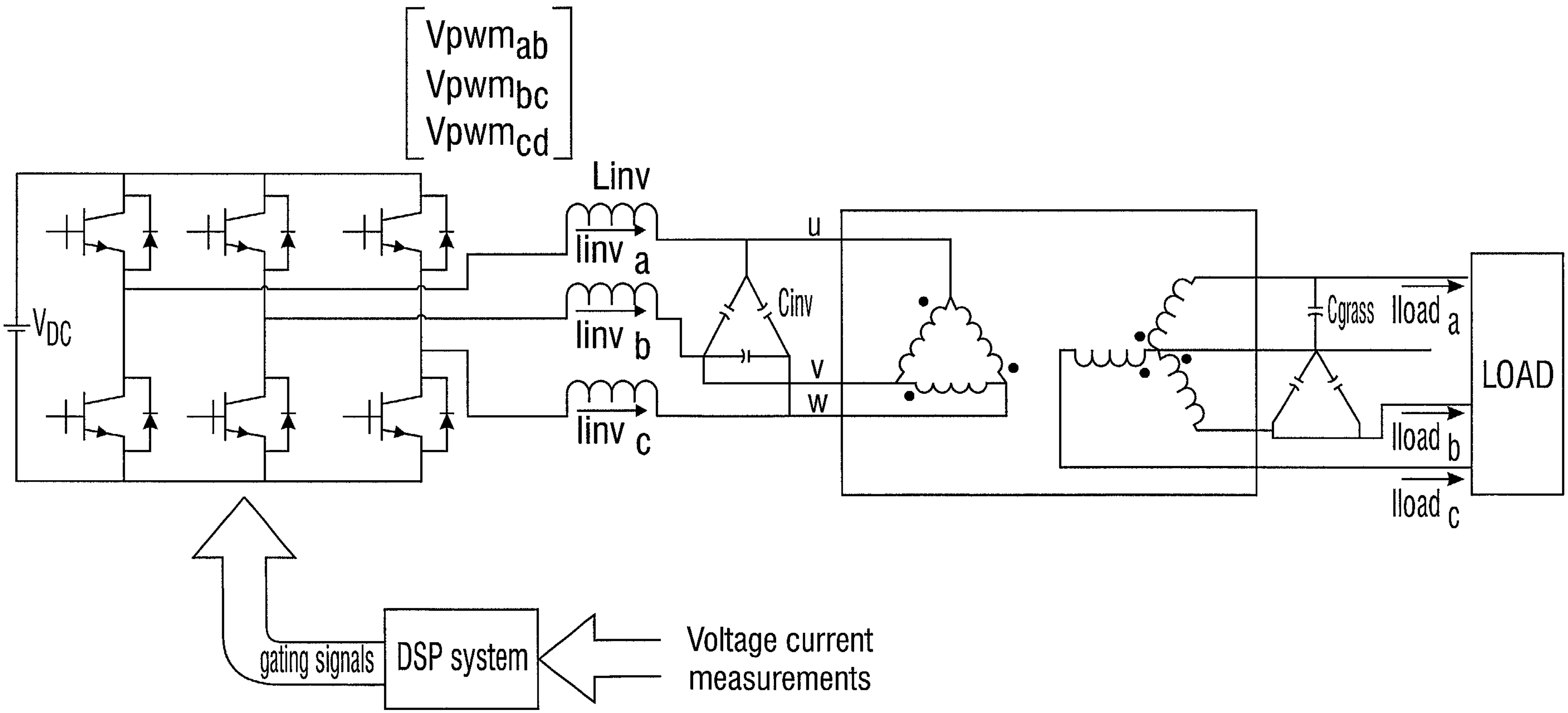


FIG. 30

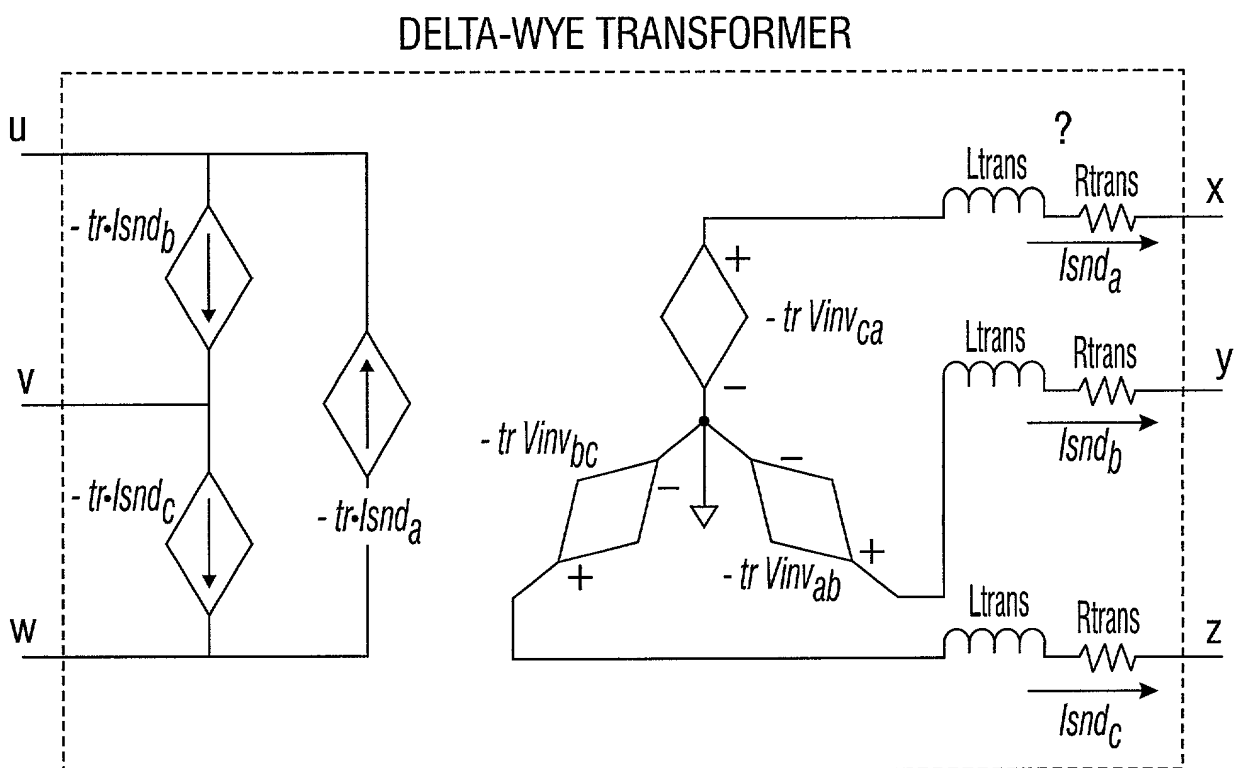


FIG. 31

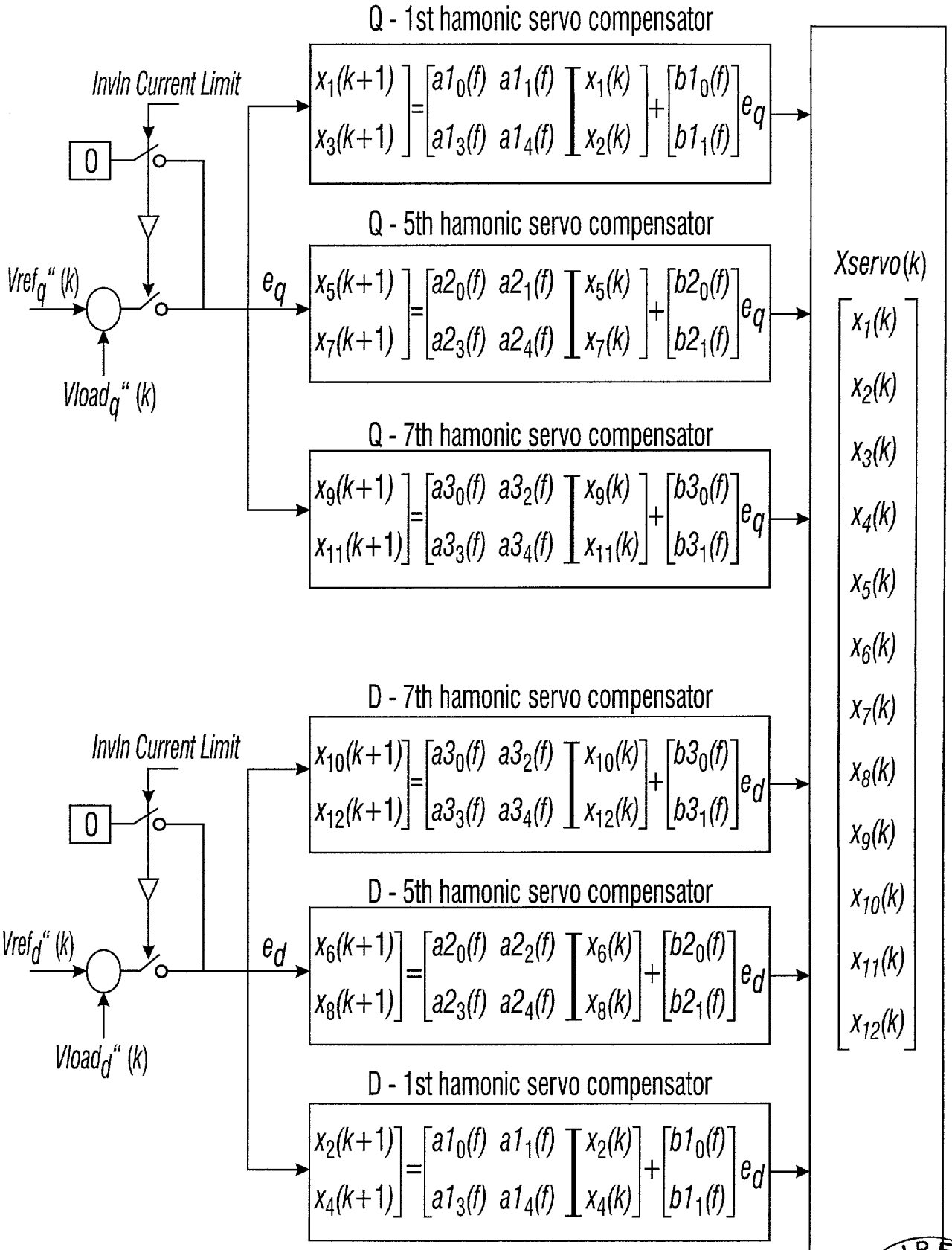


FIG. 32

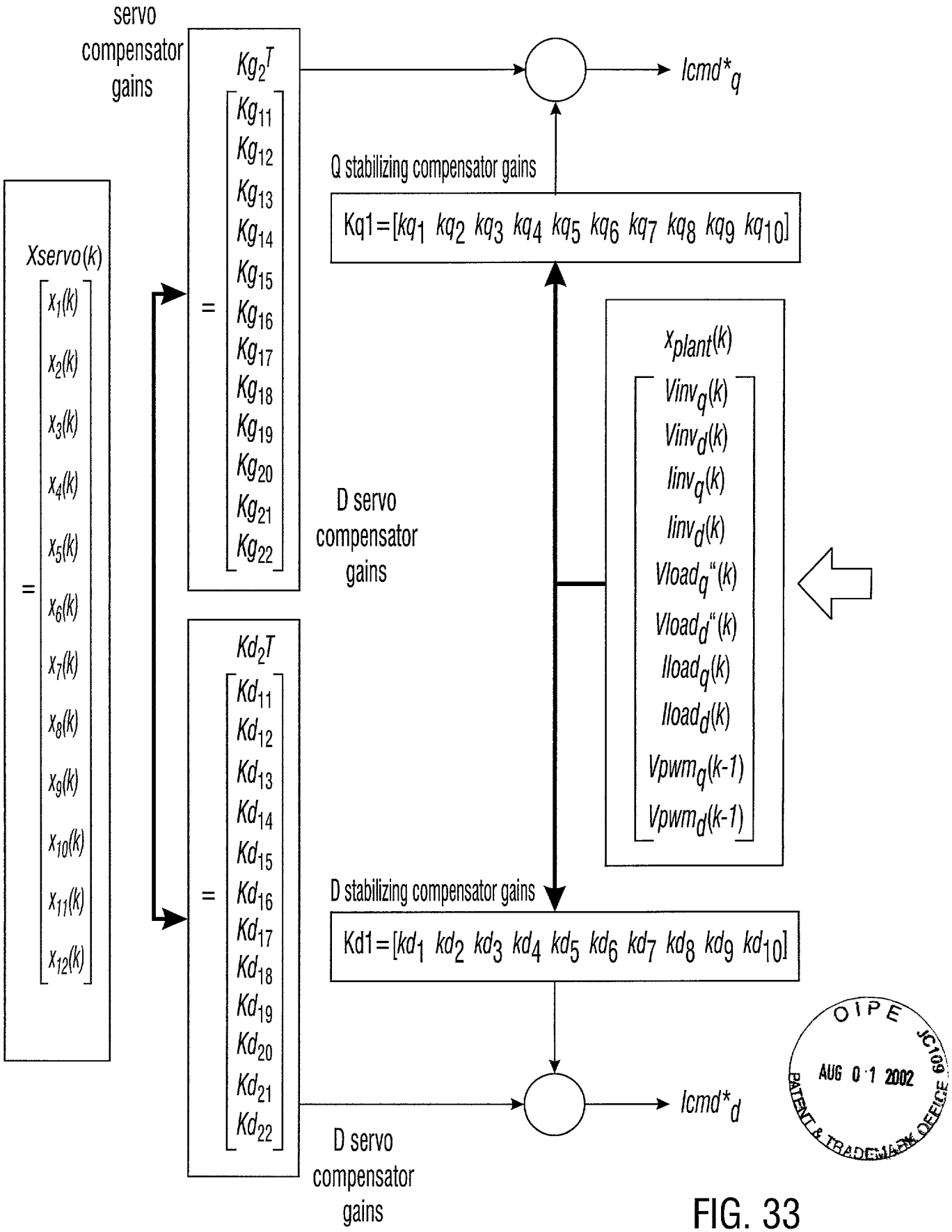


FIG. 33

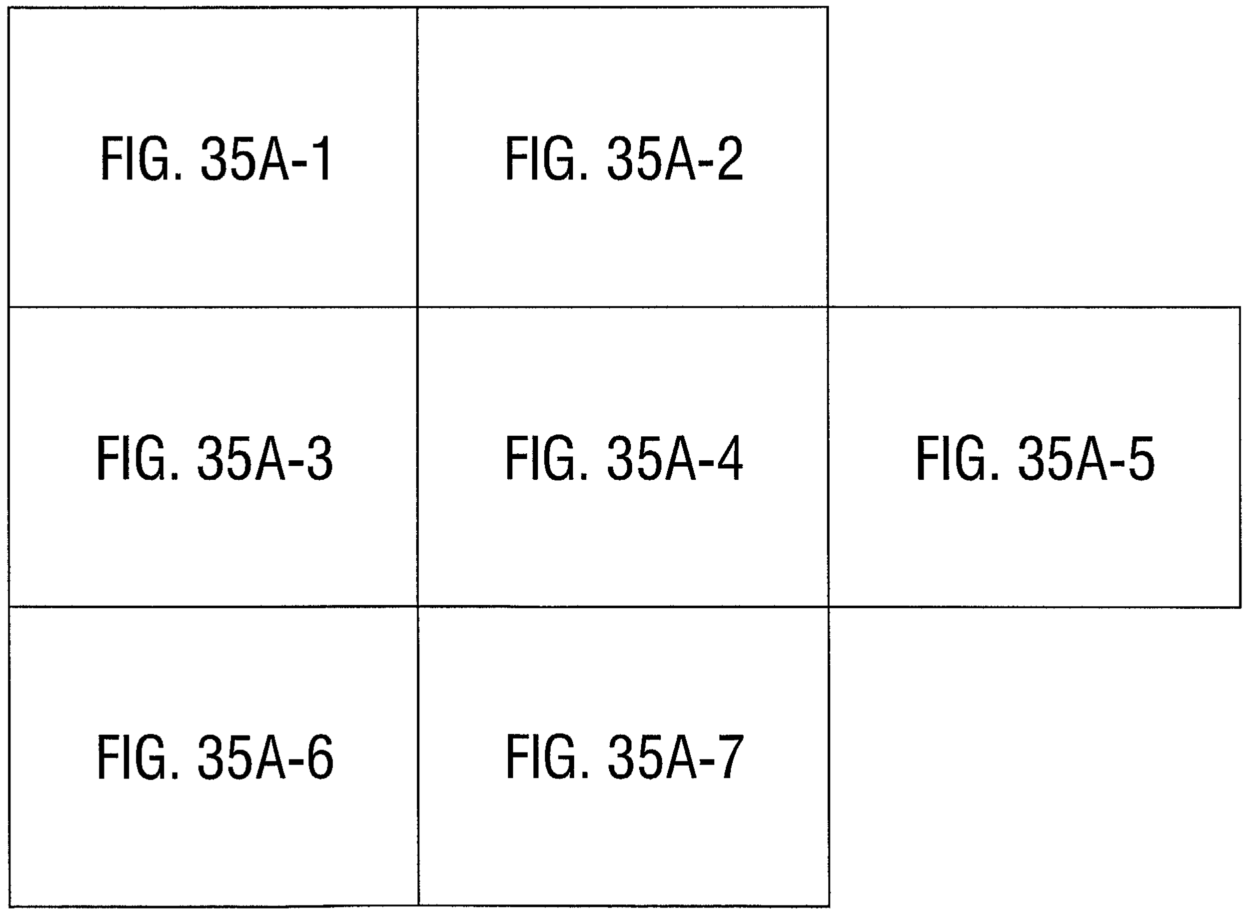


FIG. 35A

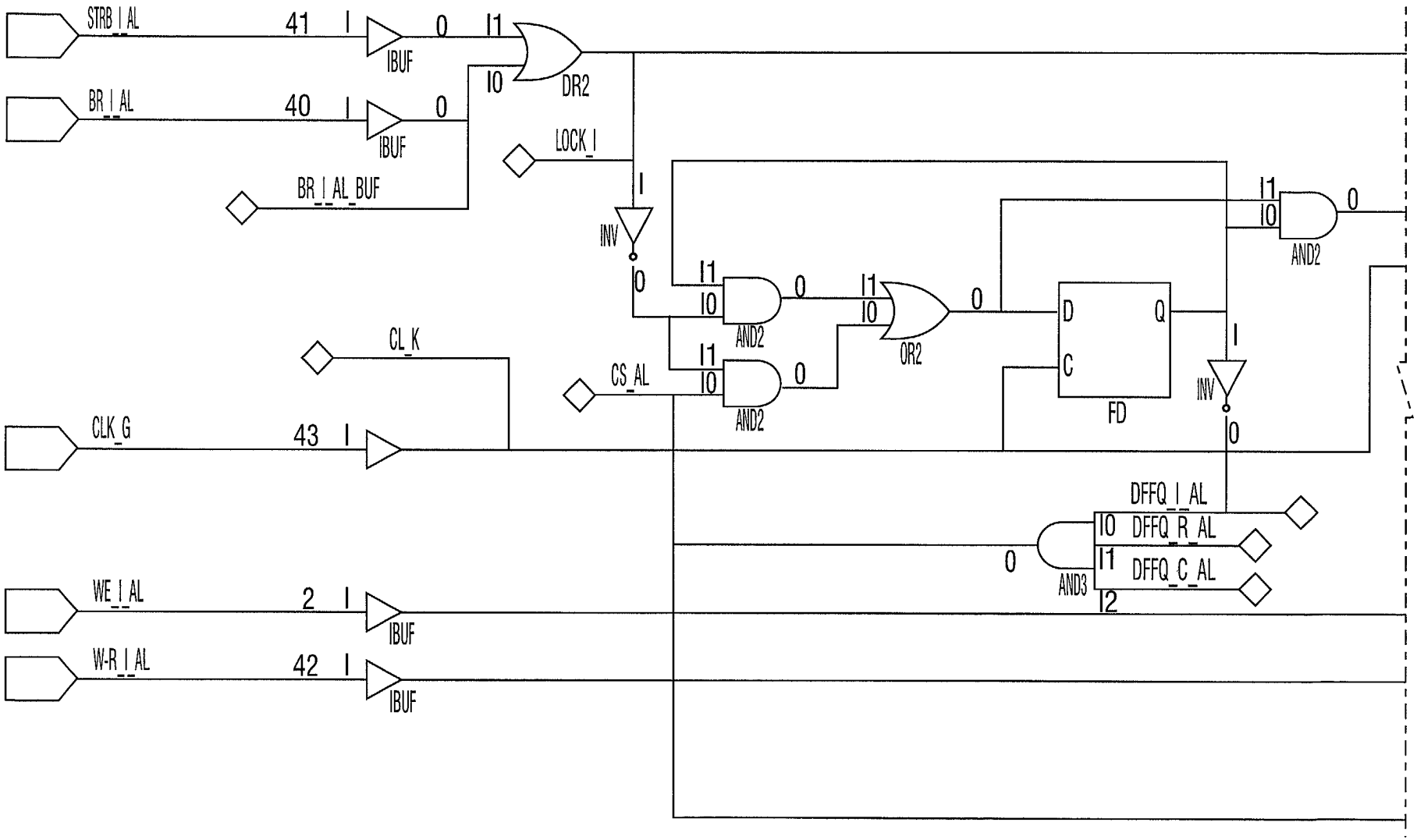


FIG. 35A-1

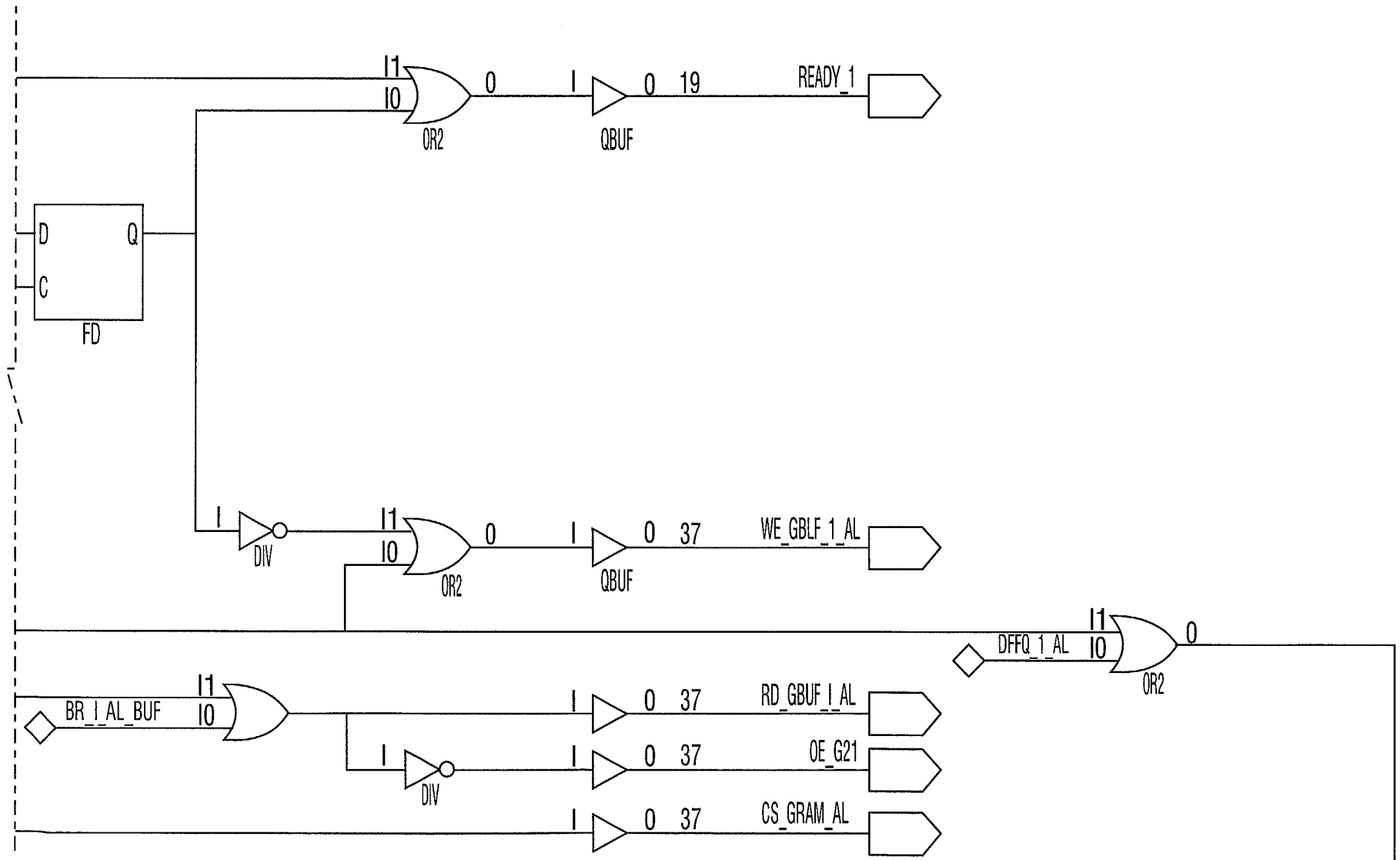


FIG. 35A-2

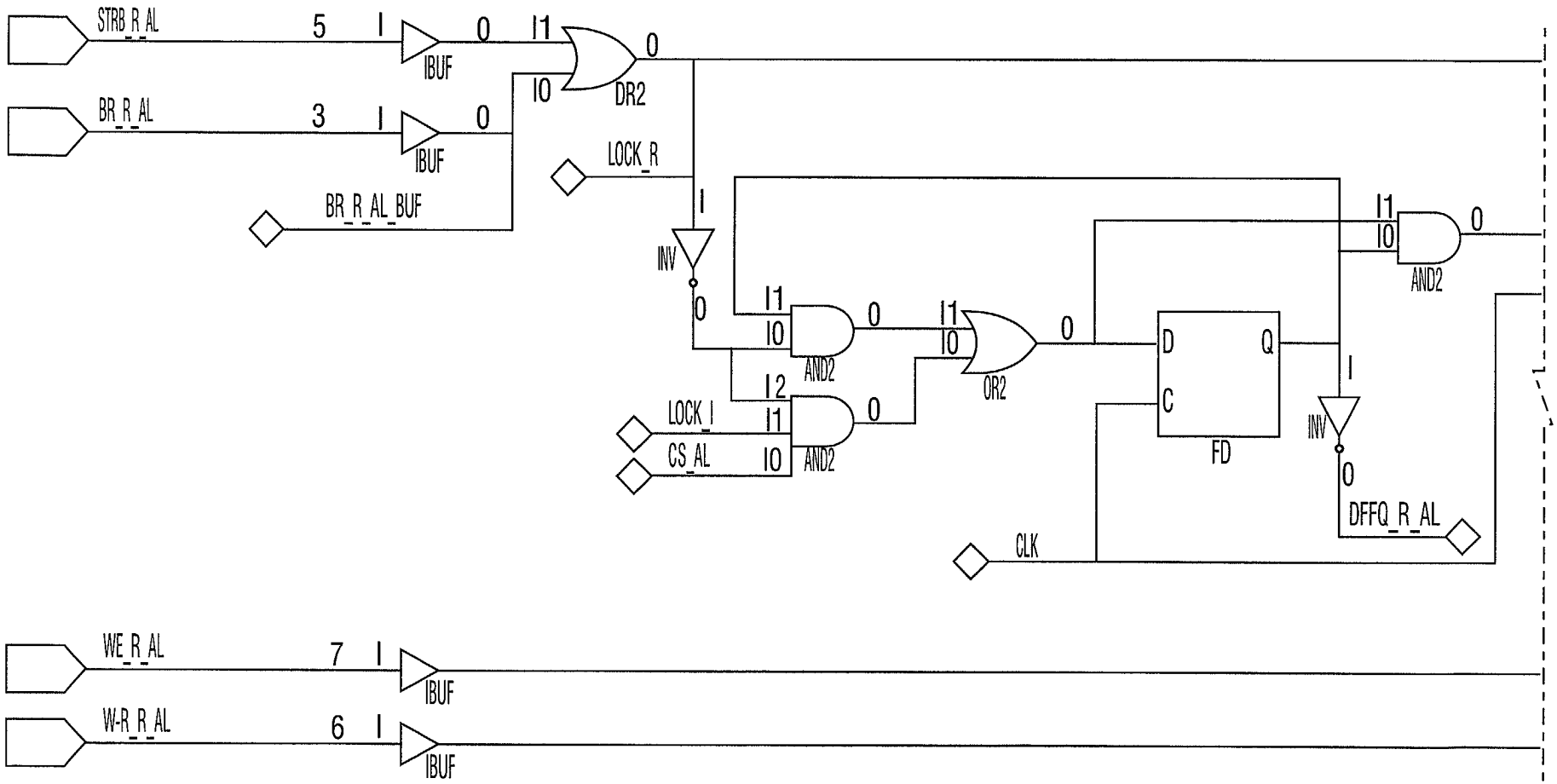


FIG. 35A-3

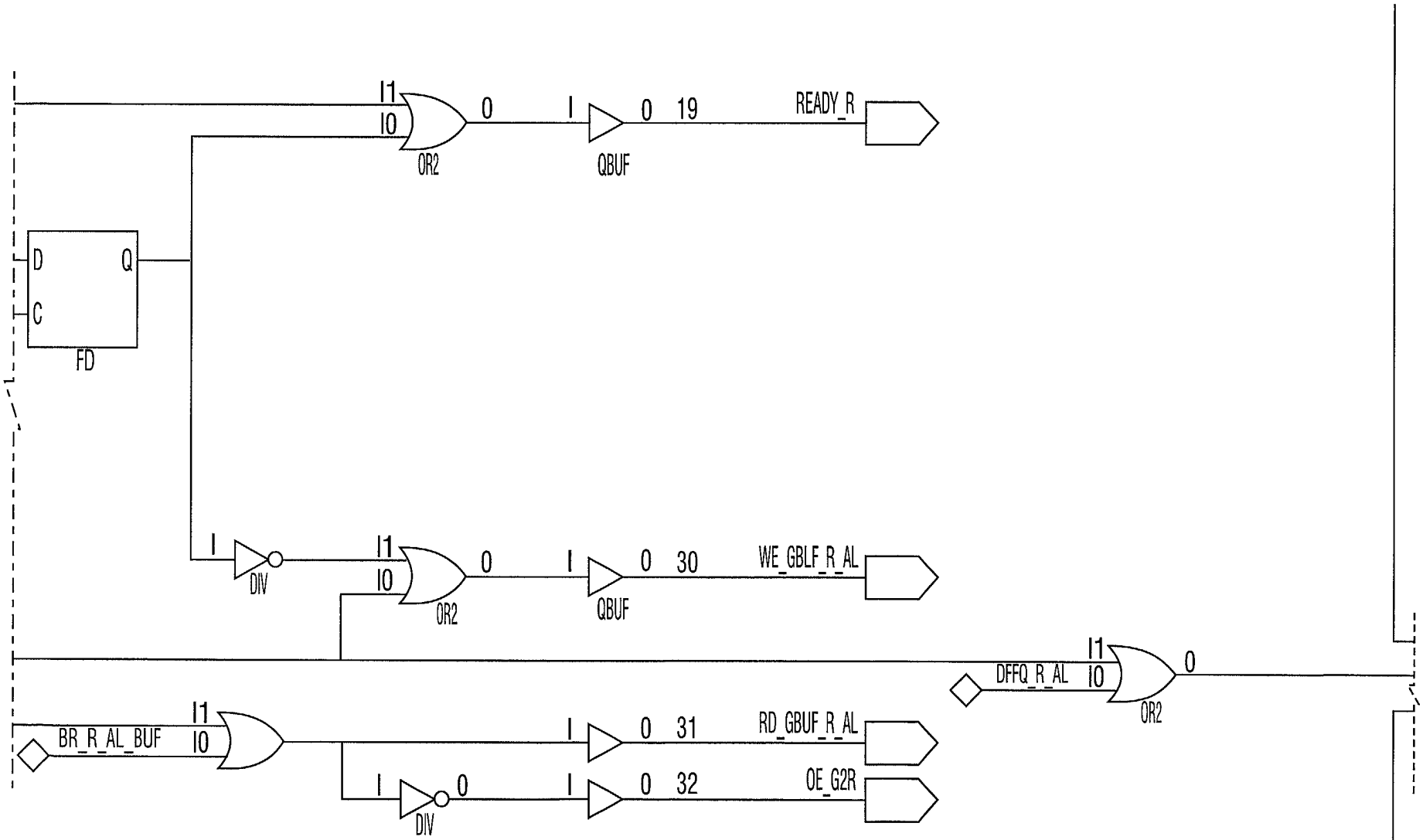


FIG. 35A-4

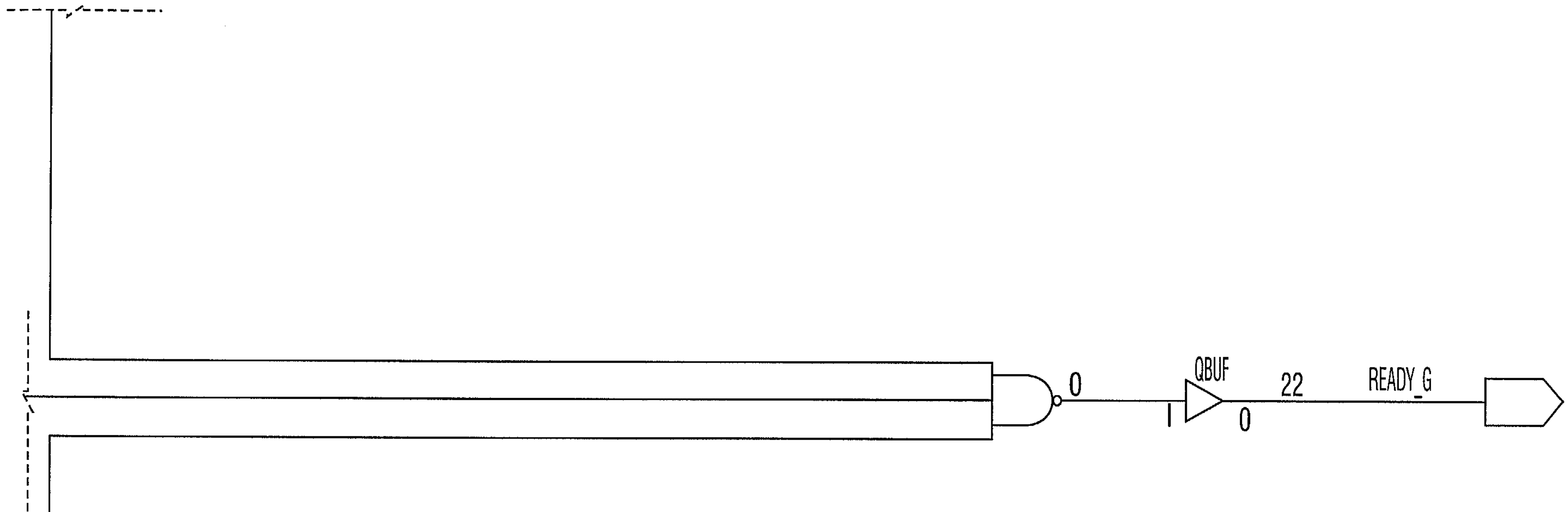


FIG. 35A-5

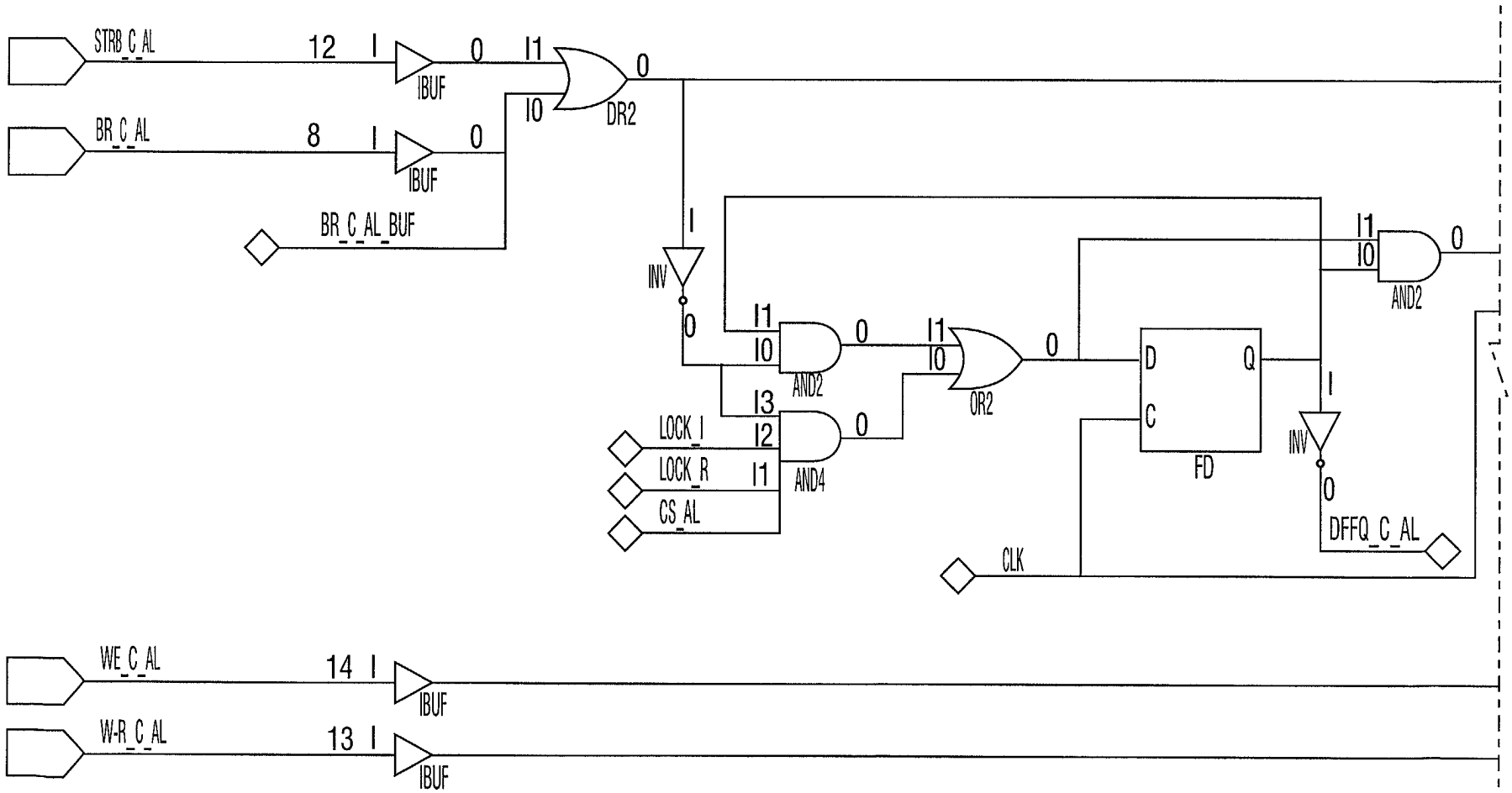


FIG. 35A-6

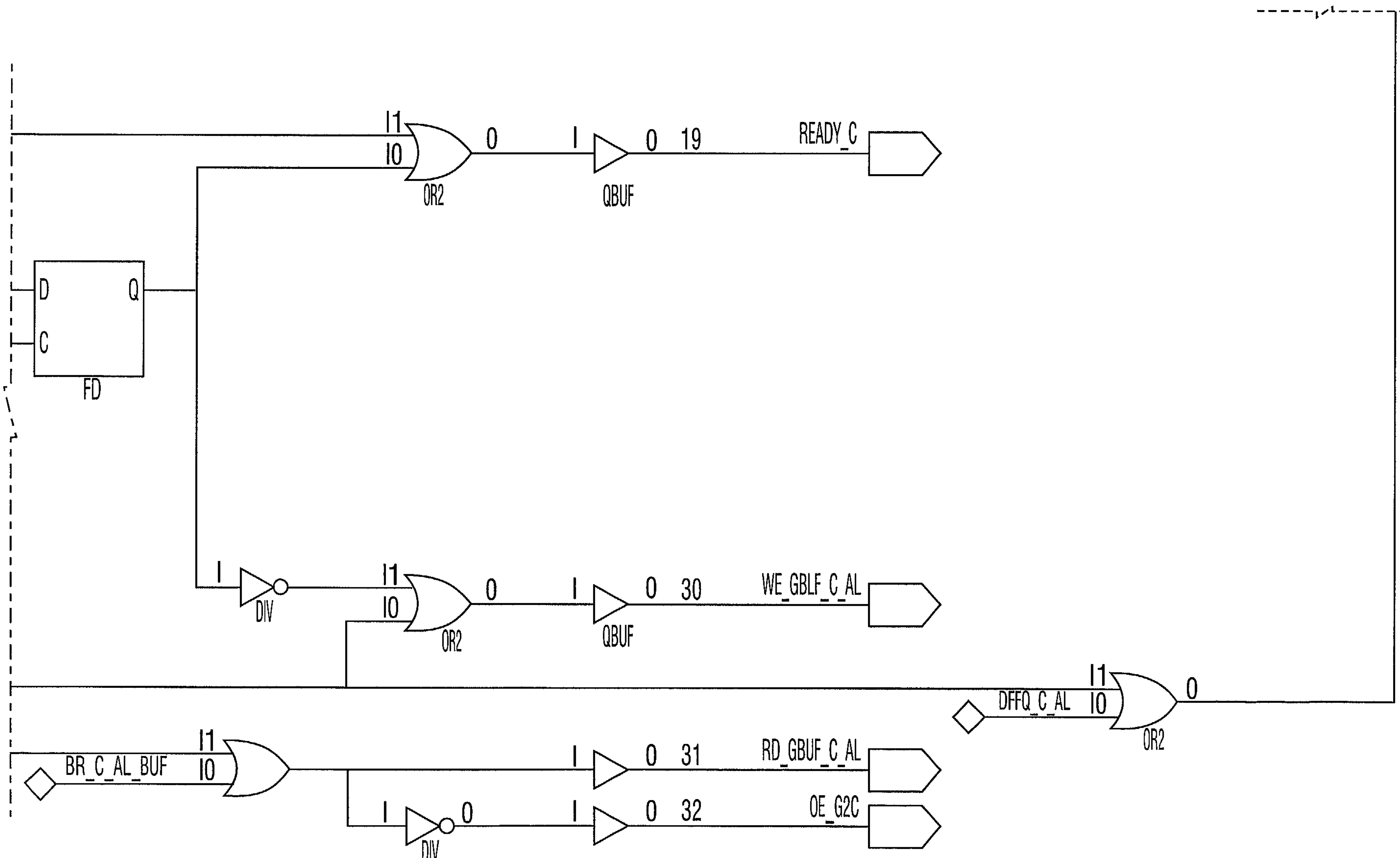


FIG. 35A-7

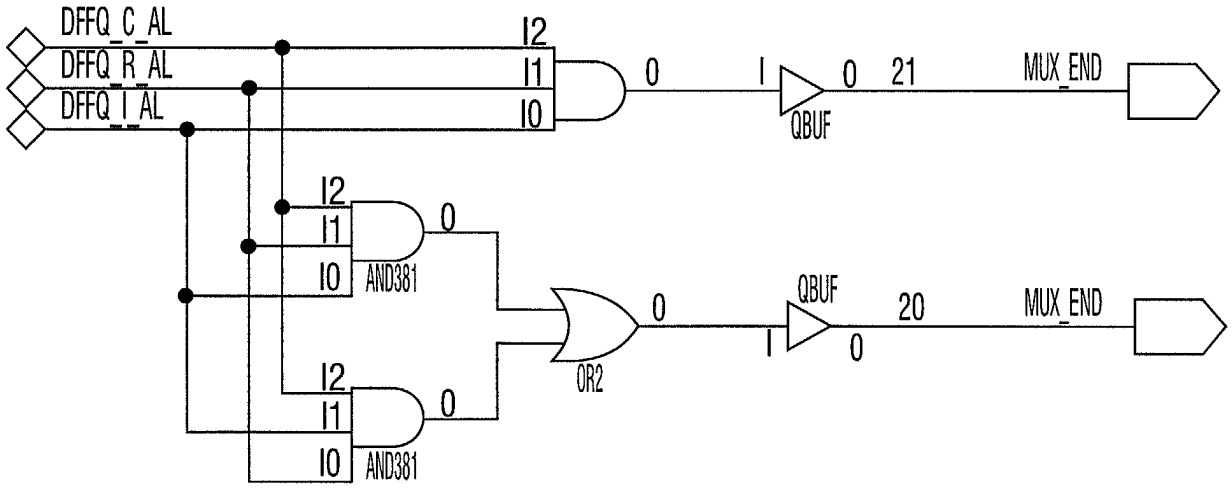


FIG. 35B

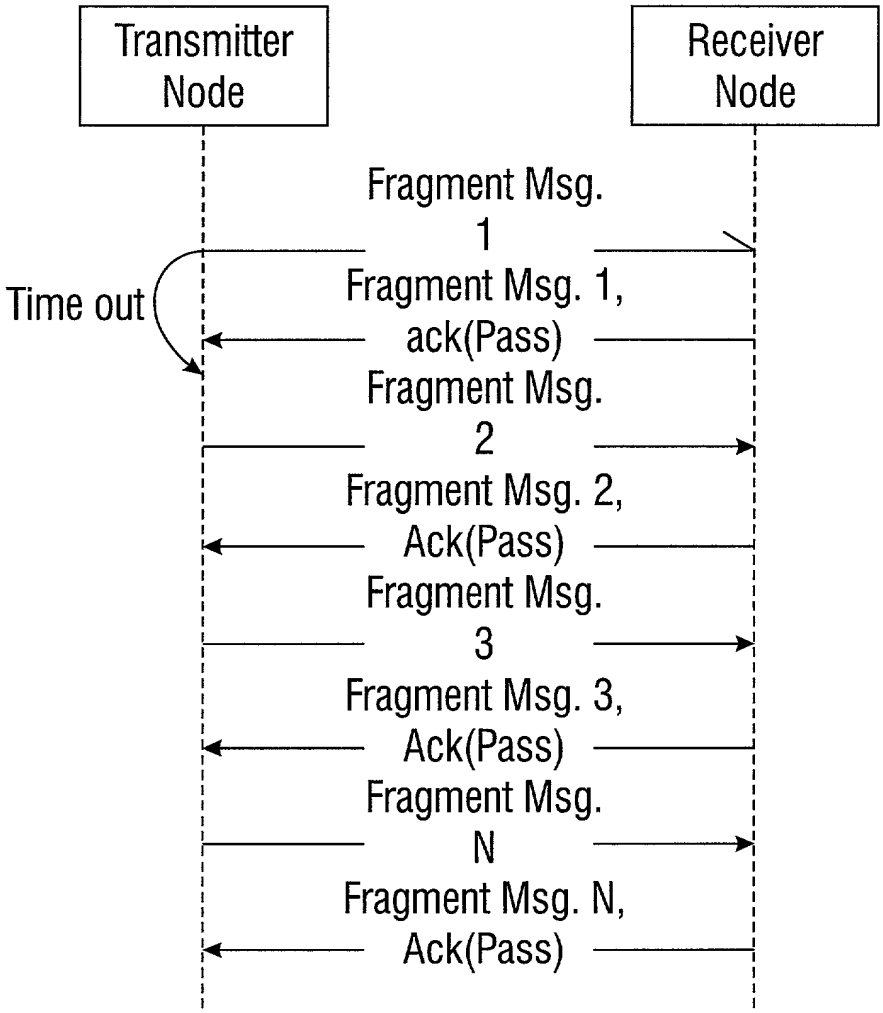


FIG. 36

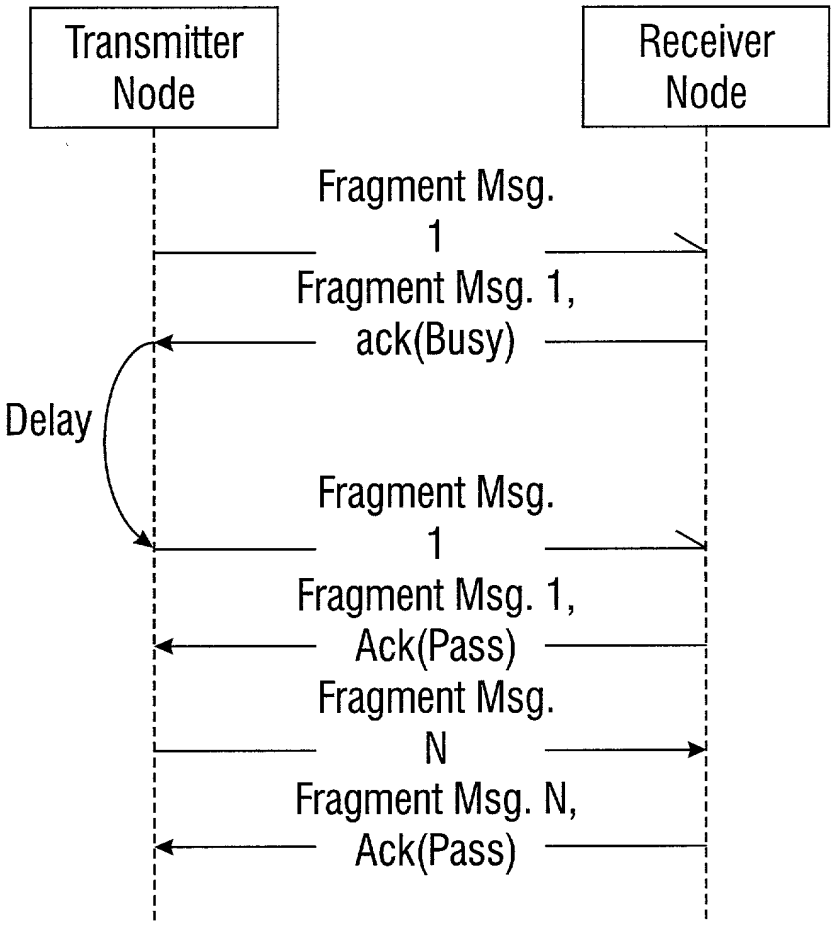


FIG. 37

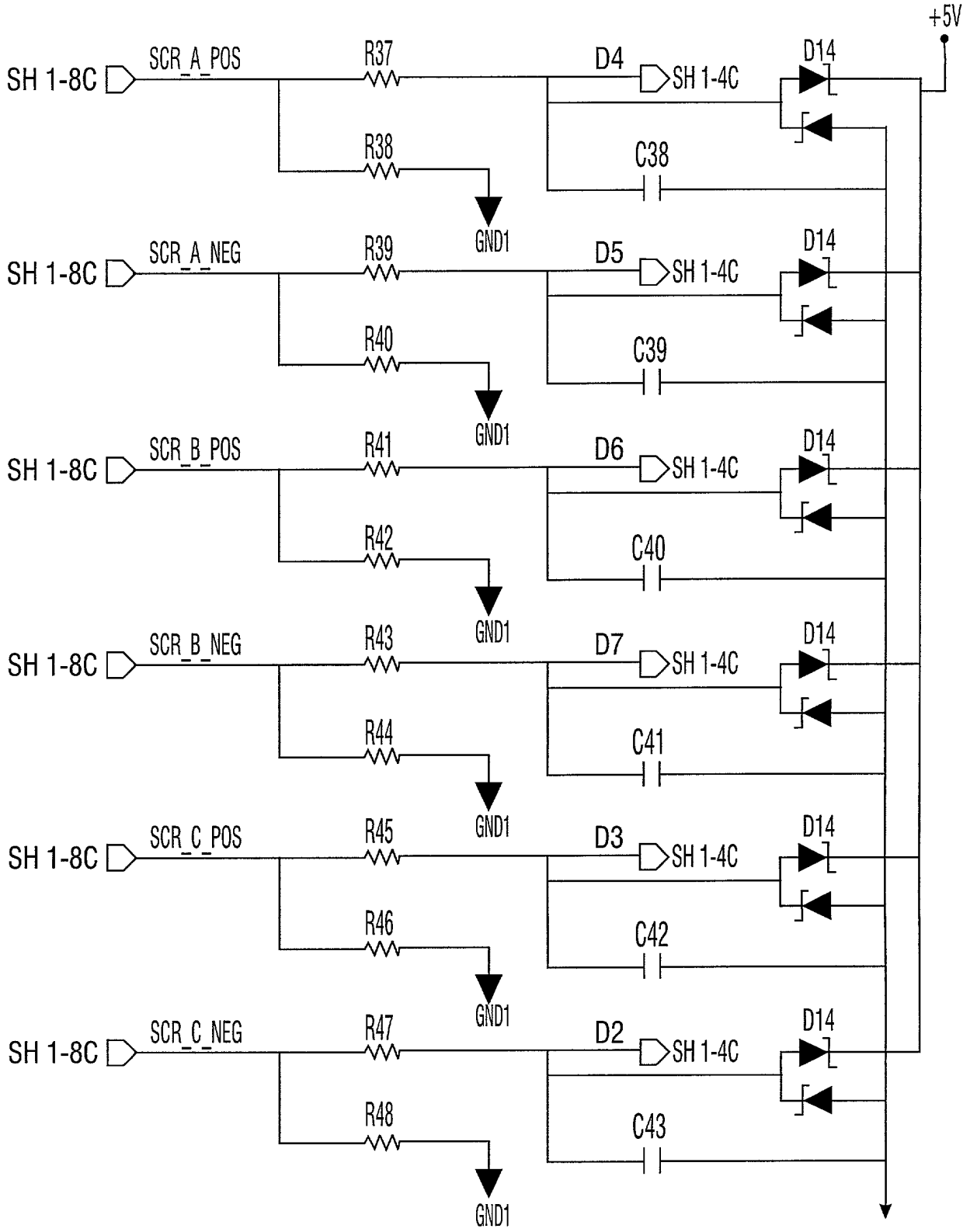


FIG. 38A

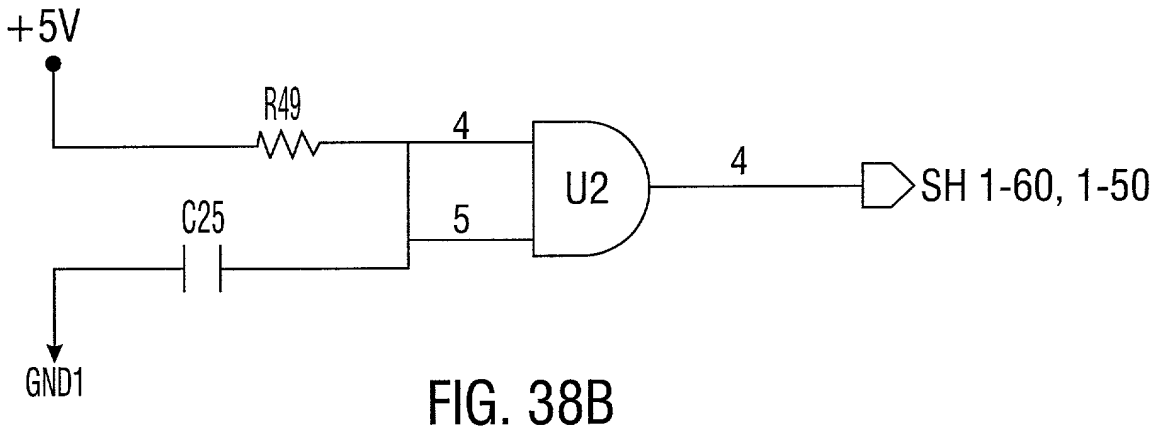


FIG. 38B

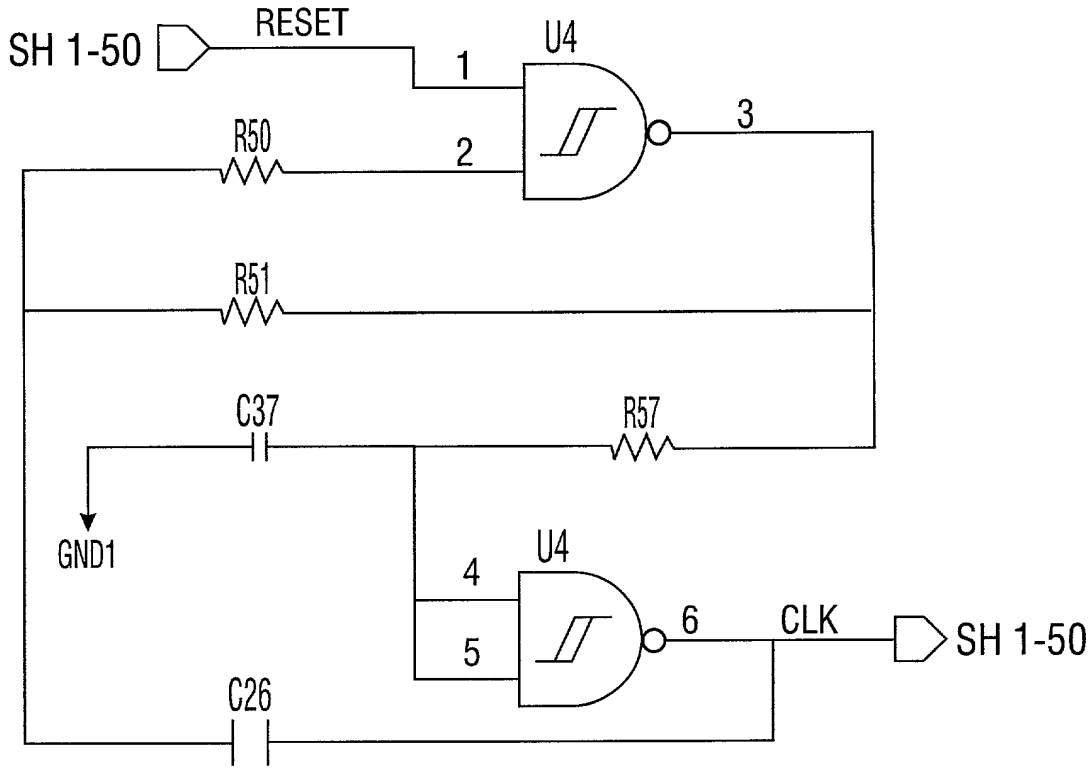


FIG. 38C

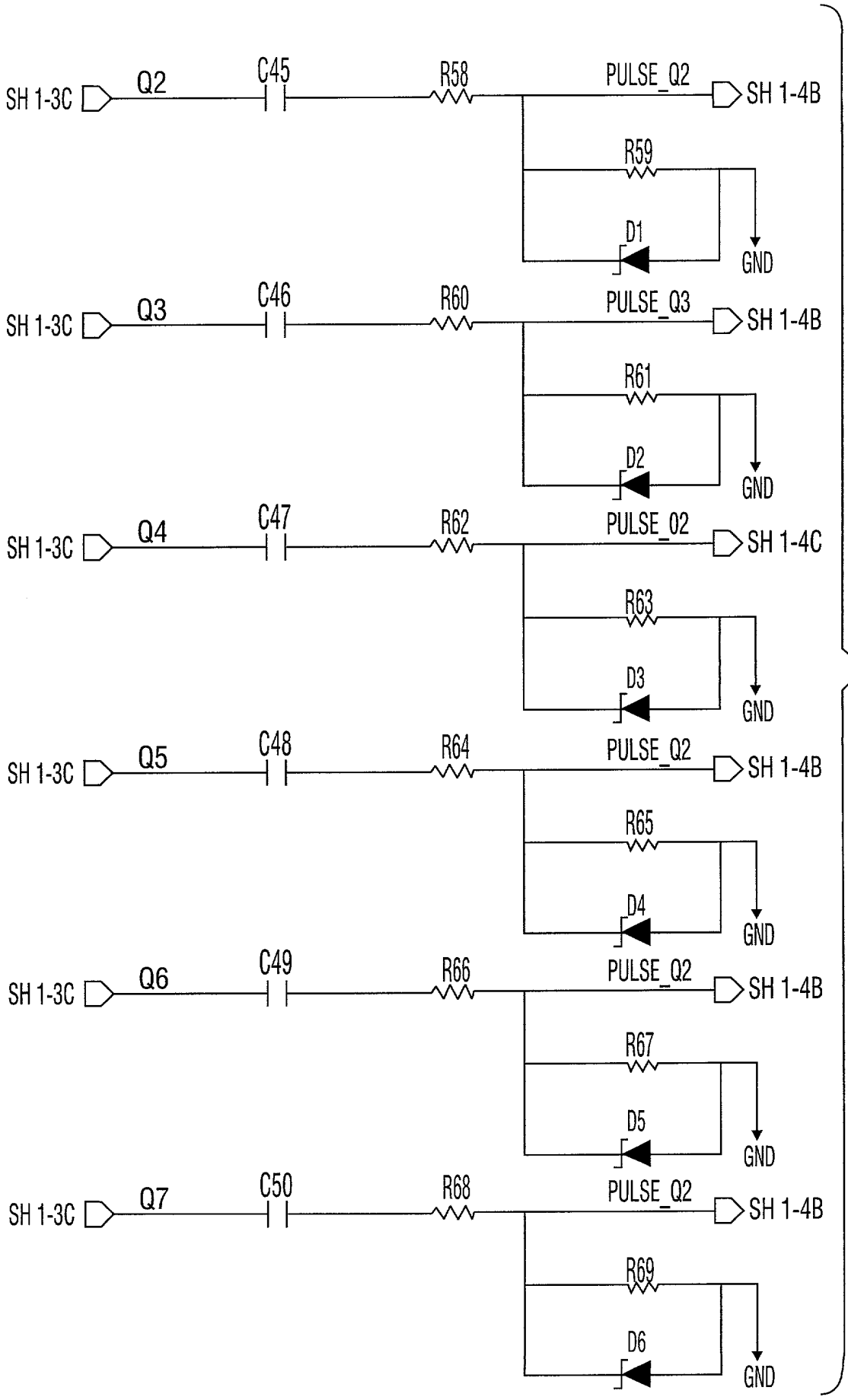


FIG. 38D

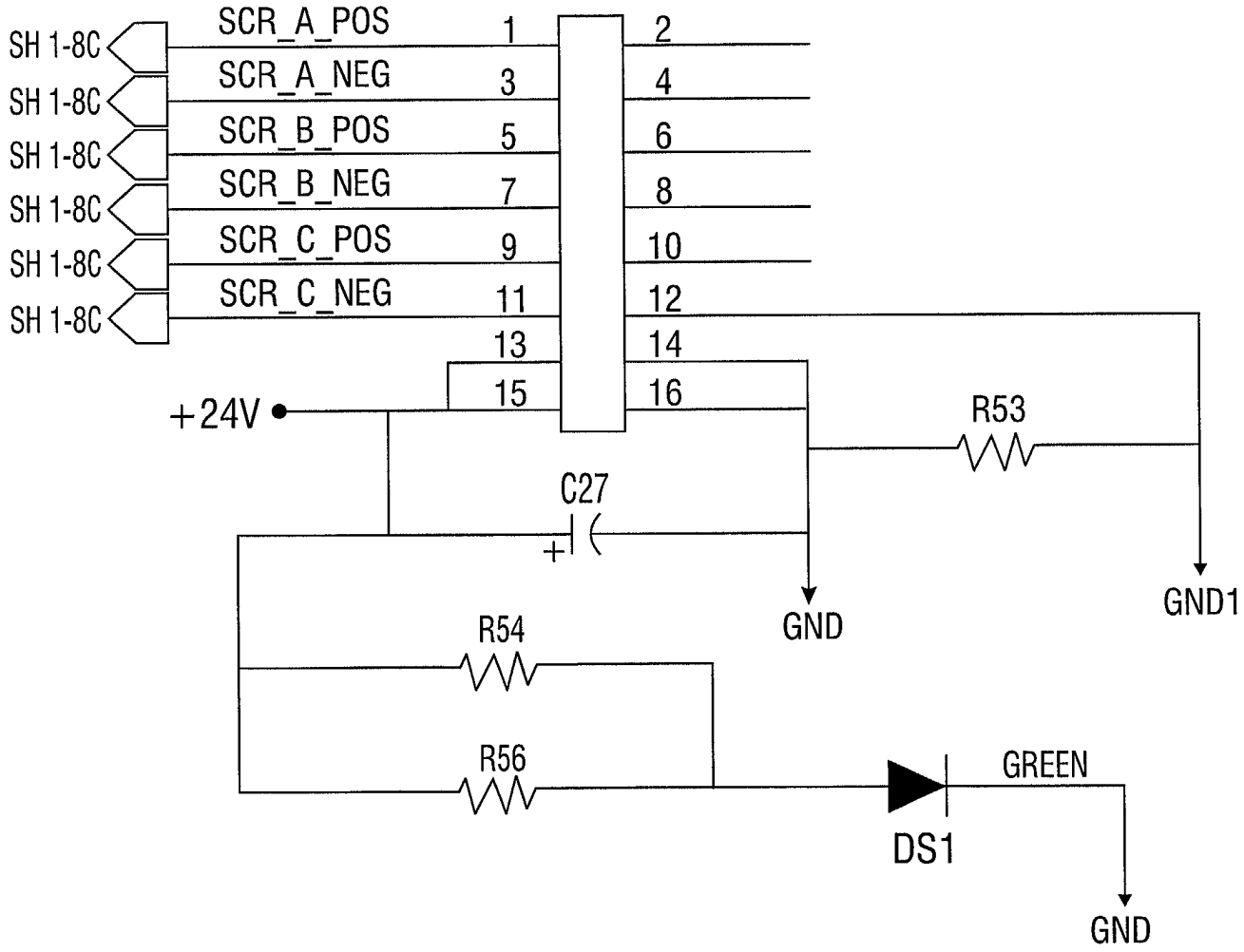


FIG. 38E

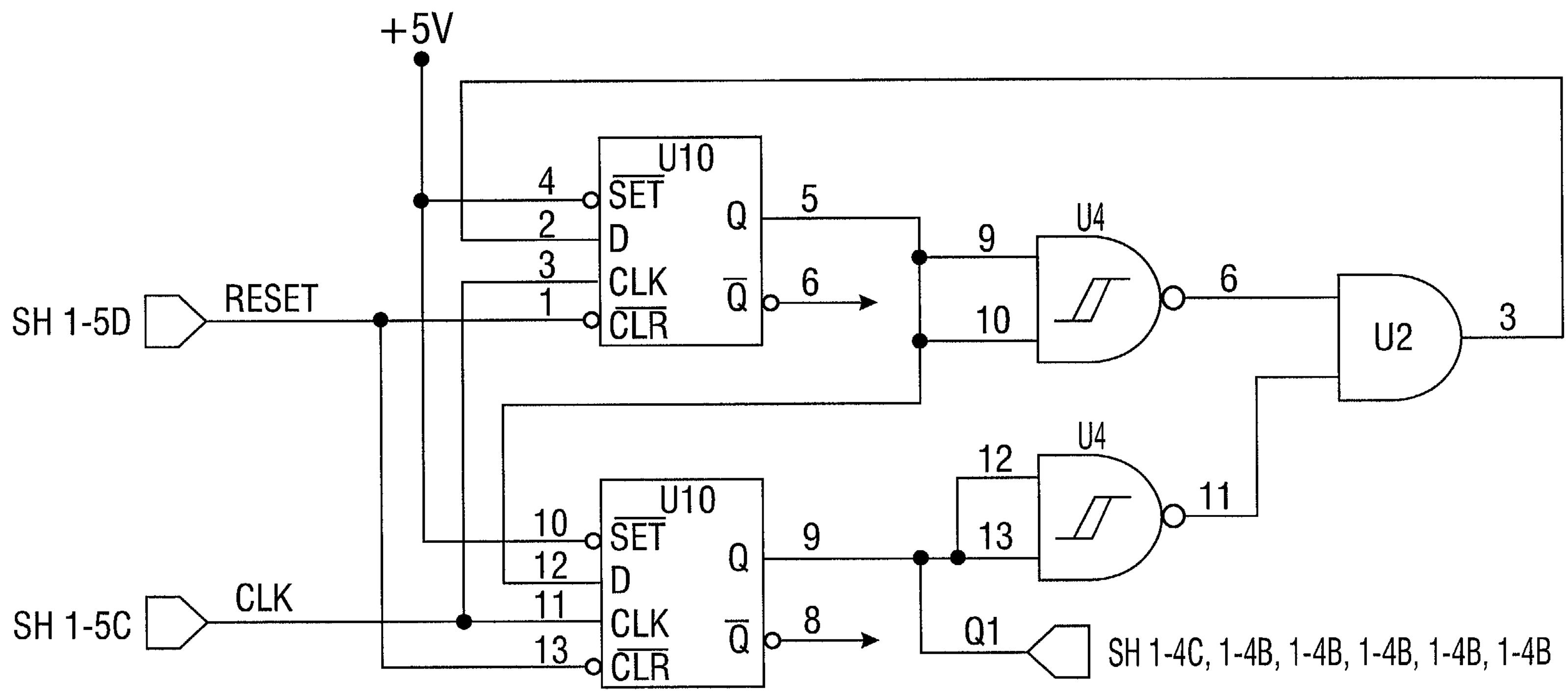


FIG. 38F

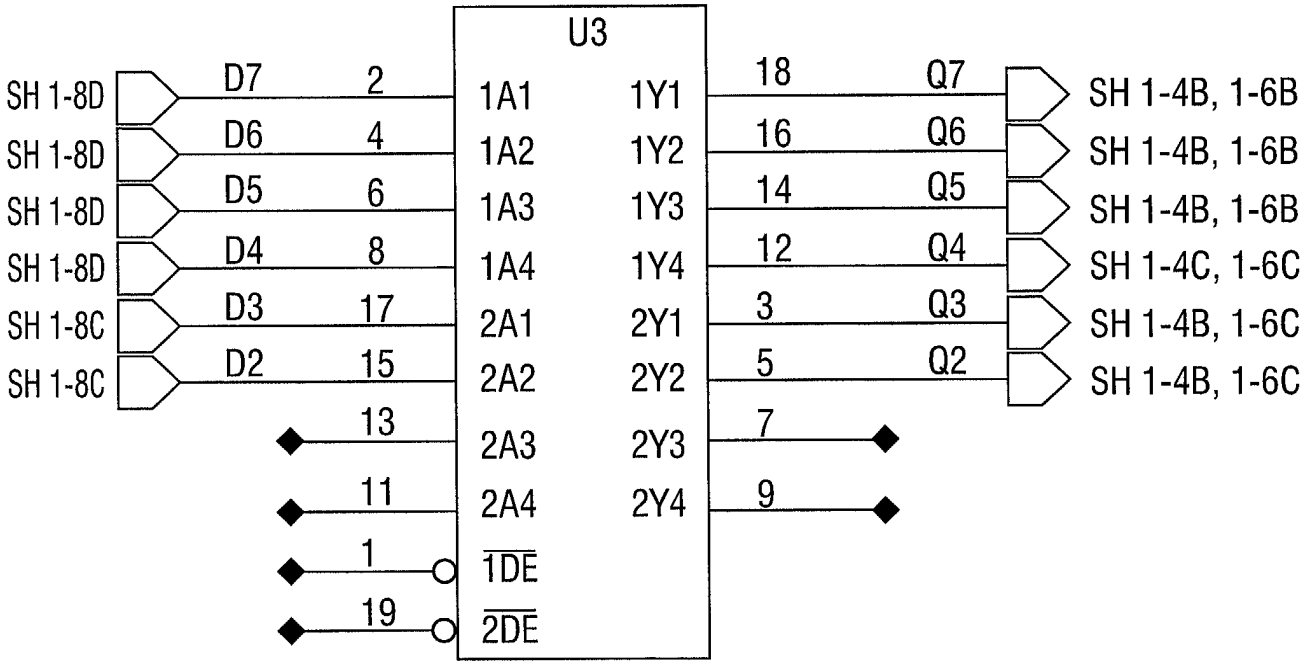


FIG. 38G

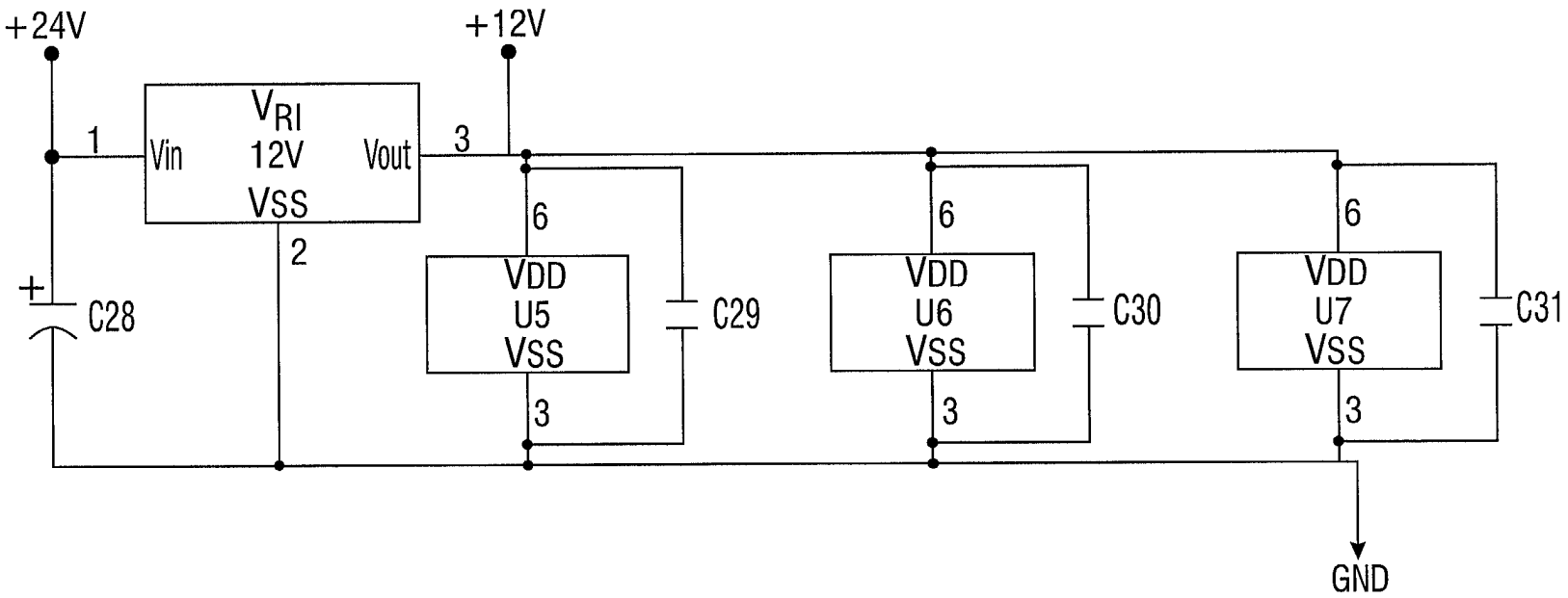


FIG. 38H

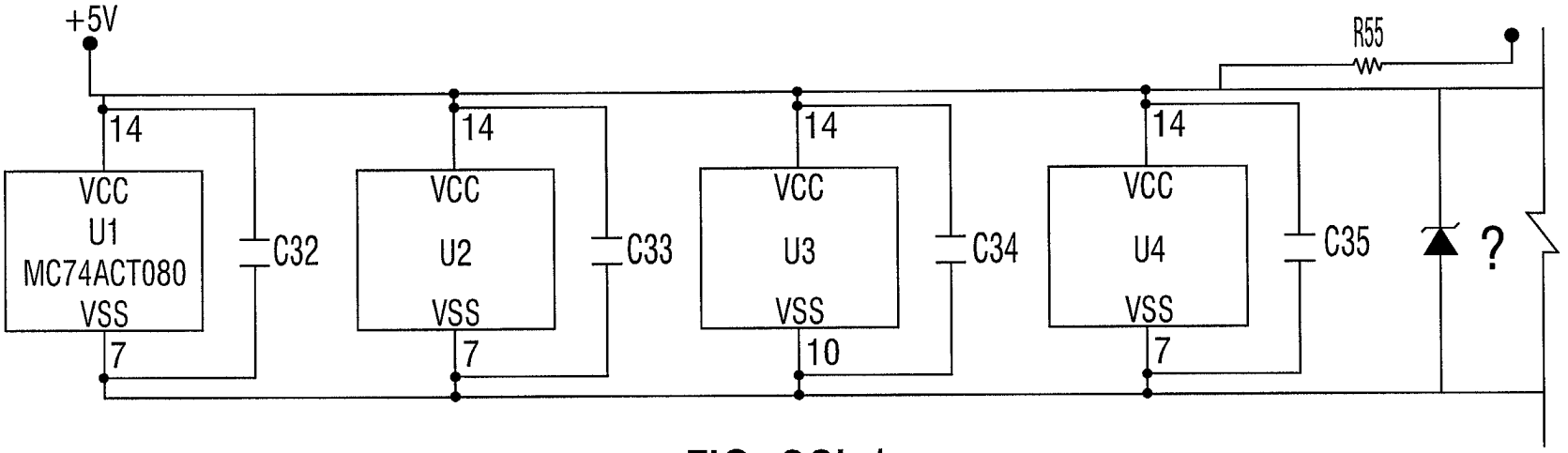


FIG. 38I-1

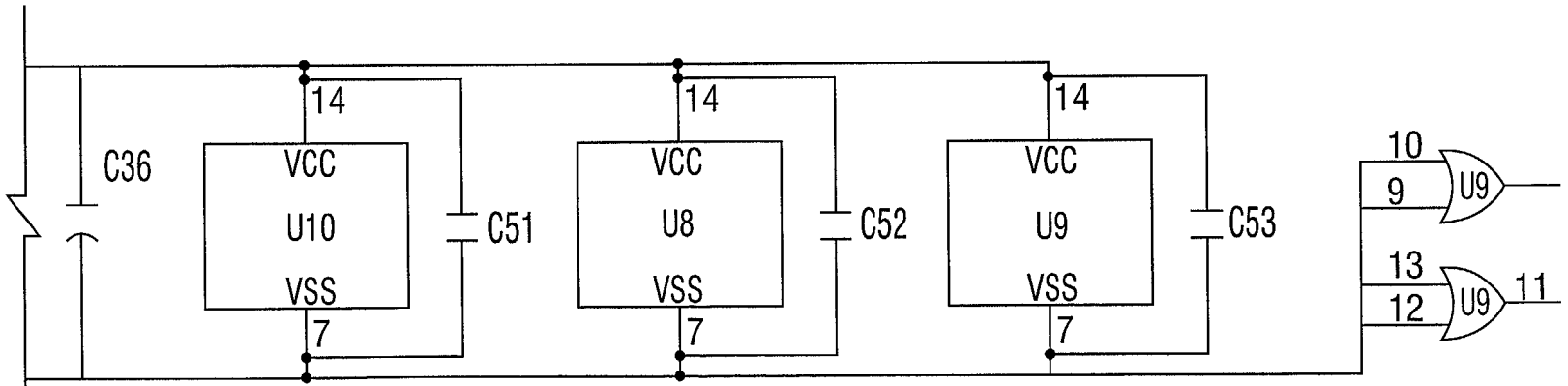


FIG. 38I-2

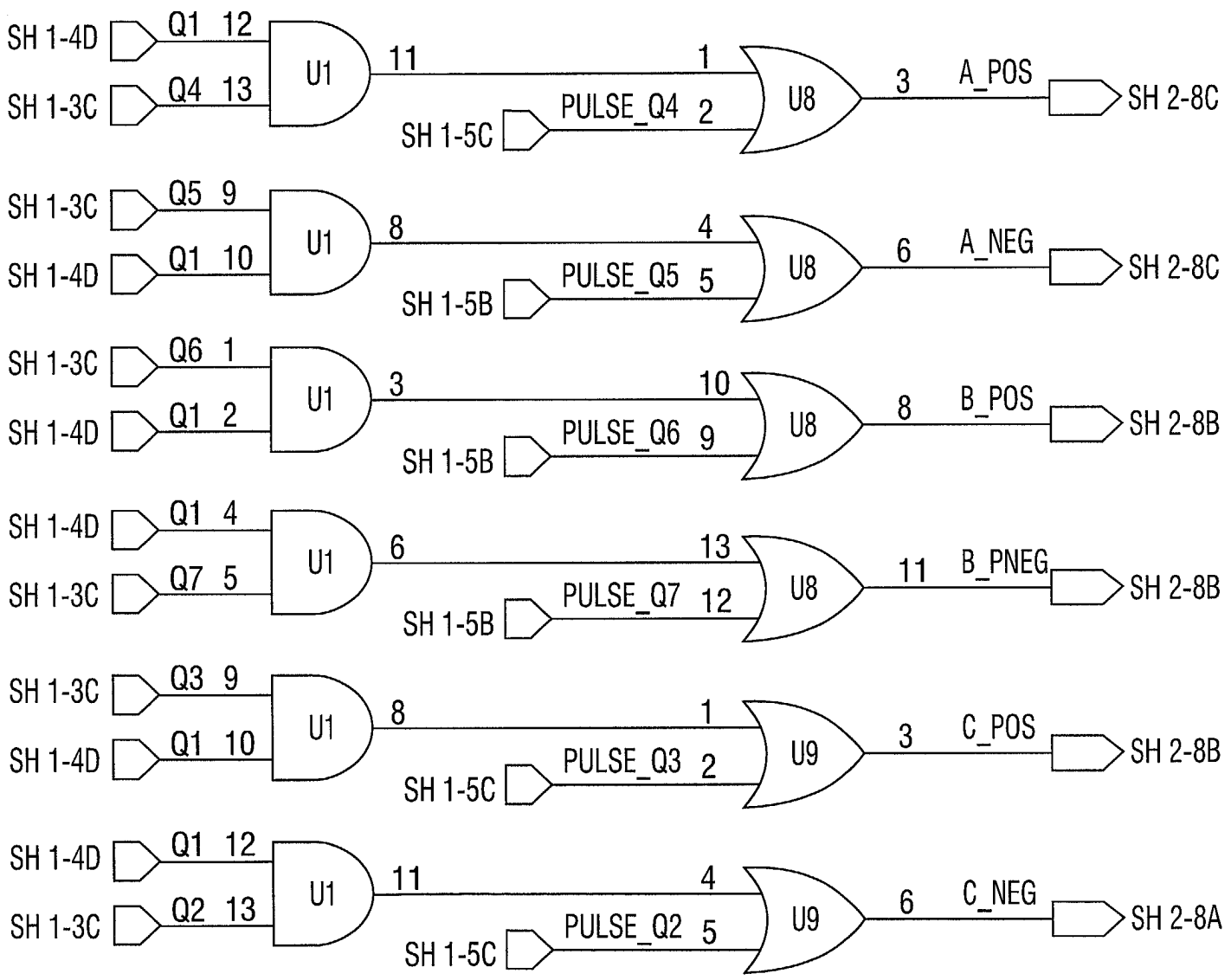


FIG. 38J